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MERCHANT MARINE POLICY

MERCHANT MARINE POLICY

**Proceedings of the Symposium of the
Fifteenth Ocean Shipping Management Institute
of the American University's School
of Business Administration**

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FOREWORD

The discussions on Merchant Marine Policy and Steamship Management Operations of the Fifteenth Ocean Shipping Management Institute of The American University's School of Business Administration constitute a worthwhile contribution toward a more general understanding of the problems facing the United States commercial shipping fleet at this time.

It is of pressing importance to the nation's economy that these problems be resolved. Otherwise there may be no commercial fleet to serve our needs in the foreseeable future. And, to resolve them, it is necessary that they be known and understood. Discussions such as this Symposium generated cannot but be helpful to this end.

That the country's merchant marine is in a seriously depressed condition is all too apparent. Our coastal-intercoastal services have all but disappeared. Our tramp shipping, except for cargo preference cargoes, would be non-existent. Our liner services, even with operating subsidies, are having great difficulty, many of them, in meeting their obligations, because of lack of cargoes and high operating costs.

The reasons for this state of affairs are many, but all too little understood. And the remedies proposed sometimes reflect all too clearly this lack of understanding. I hope that the discussions of this Institute will receive the attention and consideration they merit, in the maritime industry and in American business generally, and in both houses of Congress.

A part of the discussions, but, of course, by no means resolved or even fully treated, were the three pressing questions upon the outcome of which the American merchant marine of the future will rise or fall.

These are: (1) subsidies (can they be eliminated, as the Maritime Administrator suggests, or will they ultimately have to be extended to domestic and tramp shipping to keep them alive?); (2) containerization and automation; (3) labor relations.

The more these issues can be discussed, reasonably and with the best interests of the nation in mind, the sooner can we hope to see our American shipping on the upgrade.

To the extent that this Symposium contributed to better understanding in these areas, advance has been made towards resolution of the problems plaguing our maritime industry. But settlements of these issues through better understanding must be the objective of many meetings of minds such as represented in the Symposium.

WARREN G. MAGNUSON
Chairman, U. S. Senate Committee on Commerce

PREFACE

Thirty-five representatives of government, industry, and labor participated in a symposium on merchant marine policy at The American University campus in April, 1962. Their purpose was to probe current maritime problems and to determine how the lot of the United States Merchant Marine might be improved.

The prepared papers were made available to the enrollees before the symposium began. The quality of the 30 enrollees representing many of the maritime related enterprises, made thoughtful discussion possible. Unfortunately, these discussions were not transcribed but the conclusions are presented.

The agenda of the program focused on political, economic, national defense, and technological matters that concern U. S. flag shipping. Accordingly there was critical examination of the adequacy of the *Merchant Marine Act of 1936*; defense needs; "flags of convenience"; and the possible effects of the Common Market on the U. S. Merchant Marine. How operations research might contribute to the development of new techniques to increase the efficiency of U. S. flag vessels ashore and afloat was ably discussed. The quality and extent of enrollee response evidenced the substantive importance of the program.

For example, the group felt that although the *Act of 1936* was still sound, the concept of essential trade routes now requires further study because of the shift to bulk and tanker cargoes which has taken place within the past 25 years. With reference to a possible extension of subsidies to include shipping engaged in the tramping and domestic trades, there was a division of opinion. Some believed that such vessels should not receive support; others took the view that the matter would necessitate further deliberation before a decision could be made. The group appreciated the significance of the increasing use of airlift and its long-range effects on national defense needs. It also was aware of controversial judgment of the value of the U. S. Merchant Marine in purely economic terms. In a spirit of objective inquiry, the participants in the seminars on merchant marine policy approached the subjects that were assigned to them. The papers that follow are meaningful contributions to a broader understanding of some of the more critical issues affecting U. S. flag shipping today.

The symposium was made possible by a grant from the estate of Louis Brooks of Augusta, Georgia and New York City. A friend of Woodrow Wilson and an adviser to Franklin D. Roosevelt in 1933, Mr. Brooks had a profound interest in the United States Merchant Marine and in the welfare of U. S. foreign commerce. His generosity has resulted in the first steps toward a sustained study of maritime problems in depth at The American University.

HOWARD C. REESE, Editor
Operations Research Analyst
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INTRODUCTION

For forty-six years (since the *United States Shipping Board Act of 1916*) the Federal government has spent billions of dollars on deep sea shipping in the interest of developing and maintaining an adequate merchant marine under the American flag. For twenty-six years the framework of policy has been the basic *Merchant Marine Act of 1936*. Yet the present situation of the United States Merchant Marine falls far short of hopes and expectations, and its future is very much in doubt. It, therefore, seemed appropriate and timely to dedicate the first week of the 16th annual Ocean Shipping Management Institute to a Symposium on United States Merchant Marine Policy bringing together the best brains of the industry and leading independent experts in a "down-to-earth" seminar type of symposium.

The President's recent message on transportation gave recognition of the need of review and study of merchant marine policy. After twenty-six years of experience we should be in a position to evaluate the basic framework of policy. Changes in technology, defense requirements and American labor costs have been and are factors that had to be evaluated. The situation has been further complicated by diversion of American owned shipping to foreign flag registry and new competitive conditions arising from increased foreign flag operations and overseas air operations.

Accordingly the issues which received major attention included: What is the present status of the United States flag operations? Does the *Merchant Marine Act of 1936* provide an adequate and realistic basis of merchant marine policy? Has the defense need for a merchant marine changed basically in this missile age? What changes should be made in government policy? What can the industry do to help itself in better financial planning, research, use of containers, rates, use of computers in operations, improved cargo handling and foreign trade promotion? Is operation of American owned ships under foreign flags in accord with merchant marine requirements?

The American University is pleased to offer its campus as a meeting place for management, labor, and government to consider mutual interests and problems. It proved a most fitting place for this Symposium on the United States Merchant Marine.

MARVIN L. FAIR
Director, Transportation Program
School of Business Administration
The American University

MERCHANT MARINE POLICY

HOW SERIOUS IS THE SITUATION OF THE U. S. MERCHANT MARINE IN TERMS OF SHIPS AND CARGO ?

Ralph E. Casey

I have been asked to discuss the serious situation of the United States Merchant Marine with reference to ships and cargo. It is critical in both respects. While our oceanborne foreign trade expands, the U. S. Merchant Marine contracts. Our active fleet is too small and too old to effectively serve U. S. economic interests, quite aside from the national defense aspects. Once again we are ignoring the tragic consequences of World Wars I and II which saw America faced with a life and death struggle for survival without an adequate merchant fleet even to service its military forces overseas. Fortunately, the United States had time to remedy this near fatal error. But the cost was great in terms of lives and money. The big question is, "Will we have time again?"

THE PREWAR SITUATION

One measure of the inadequacy of our merchant fleet is a comparison with the prewar merchant marine. Today we have 154 fewer vessels in active operation than in 1939, a year when this country was just emerging from the long depression of the 1930's. As in 1939, our merchant marine is old and, as a matter of fact, practically obsolete. Within three years 8 out of 10 privately owned ships will have reached twenty years of age or over. It is becoming more and more difficult for our fleet to meet the competition of the newer and more efficient ships of our competitors.

The domestic trade has suffered the most with a loss of 363 dry cargo vessels over 1939. Four companies now operate 24 ships in the intercoastal trade. In 1939 there were 143 ships in the intercoastal trade. Sea-Land Service and States Marine each operate 3 ships as common carriers in liner service. The remaining 18 ships are industrial carriers. Bethlehem Steel Corporation (Calmar Line) operates 11 ships and Weyerhaeuser Steamship Co. maintains seven ships as industrial carriers one way and provides a liner service on the re-

Ralph E. Casey, President, American Merchant Marine Institute, Inc.

turn run. Such fixtures in the trade as Luckenbach which once operated 16 ships, Pope and Talbot, and Hawaiian-American have been forced out of business.

The coastwise trade has shrunk from 266 cargo ships in 1939 to 33 ships at the outset of 1962. Pan-Atlantic with 3 ships and Seatrain with 5 ships provide the only liner service. There are 19 industrial carriers and 6 irregular carriers in the trade. The Pacific coastwise fleet has narrowed to 4 industrial vessels. The last common carrier, Coastwise Line, left the business two years ago. At the end of 1961, there were 48 ships employed in the noncontiguous trade as compared with 59 in 1939. This trade is closed to foreign flag ships and there is no rail competition. Airline competition, however, for the passenger business has caused the layup of 9 combination ships. Thus, in the face of an expanding economy with an ever-increasing demand for domestic transportation, the coastwise and intercoastal fleets have all but disappeared.

RAIL COMPETITION

Unfair and sometimes ruthless railroad competition has been a major factor in this sharp and alarming decrease in the size and commercial participation of the domestic water carriers. Decisions of the Interstate Commerce Commission have permitted the railroads to engage in a cutthroat pattern of selective and discriminatory rate reductions against water-borne traffic.

The most recent example can be found in the report of the ICC in Docket No. 33234—*Canned Goods*. In the intercoastal trade, canned goods represent about 70 per cent of eastbound movement. To obtain a greater share of this business, the railroads reduced the rate for minimum shipments of 75,000 lbs. by 20 cents per cwt. The new rate of \$1.74 cwt. was estimated to be 35 cents above out-of-pocket costs but 32 cents below fully distributed costs. Out-of-pocket costs can be defined roughly as that money spent because particular traffic is handled, or conversely, the money that would be saved if that particular traffic was not handled. Fully distributed costs would include out-of-pocket costs, plus overhead and depreciation. The formula can be stated as follows: railroad out-of-pocket charges include all of the variable costs, plus a 4 per cent return on all of the rolling stock, plus a 4 per cent return on one-half of the fixed assets. The fully distributed water cost was estimated to be \$1.495, so that the \$1.54 rate included only 45 cents profit per 100 lbs.

To meet the rail reduction, a lowered water rate was published for palletized shipments. Meanwhile, the water carriers petitioned the ICC to suspend the proposed decrease in the rail rate but the request was denied. During the first year of the rail rate reduction, Luckenbach lost 200,000 tons of canned goods to the railroads. This was an

important factor in that company's decision to quit the intercoastal trade after more than 100 years of service.

ICC FINDINGS

The ICC investigation concluded that, since the new rate exceeds the fully distributed cost of the low cost water carrier by a substantial margin, it is lawful, even though it might be, as in this case, substantially below the fully distributed cost of the railroads. It is clear that the ICC Suspension Board will not suspend any rail rate on a water competitive commodity that is over and above out-of-pocket costs. The ICC now is of the opinion that under the *1958 Act* it need not preserve the inherently justified water-rail rate differentials. Amazingly, another result is that after 20 years of ICC jurisdiction there is no acceptable cost formula to ascertain over-all operating costs of water routes for comparison with costs over all rail routes. Even an extremely efficient container ship is unable to overcome this kind of railroad rate cutting.

THE CONTAINER SHIP

The container ship is a highly specialized type of general cargo ship designed to carry a wide variety of packaged goods stowed in cargo vans or containers. Its main economic advantage is in the speed with which the vessel can be loaded and discharged, with the resultant reduction in cargo handling costs. In the domestic trade, stevedoring and other cargo expenses may represent from 65 to 70 per cent of the voyage cost. Loading time of a container ship can be slashed from five days to less than one day. This means a saving in vessel operating costs, which in the case of the ordinary freight vessel exceeds \$2,000 per day, in addition to the considerably less stevedoring costs. Another significant economizing is incurred by the shipper through reduced packaging requirements for containerized cargo. The container ship still seems to be the most efficient method of transportation yet devised for the distances in the domestic trade. Nevertheless, it must compete with the railroads which have been permitted, arbitrarily and selectively, to set rates for competitive cargoes far below fully distributed costs. Railroad out-of-pocket costs may be as low as 40 per cent or 50 per cent of fully distributed costs. In my opinion, container operations have not yet reached their full potential. Both Luckenbach and American-Hawaiian have been giving consideration to the construction of container ships for the intercoastal trade. The specter, however, of virtually uncontrolled railroad competition has dampened the enthusiasm for any large scale capital investment. Only in the event that railroad rates for water competitive cargo are based on or near their fully distributed costs can we expect any improvement in this trade.

TROUBLES WITH TANKERS

Our tanker fleet is also in serious trouble. At the end of 1961, the U. S. tanker fleet was 56 ships below the 1939 level and 171 tankers below the 1948 postwar peak. There were only 12 U. S. flag tankers in the foreign trade. Labor problems, high vessel operating costs and vessel replacement costs have engendered pressures for an alternative transportation system. Recently, nine major oil companies banded together to build a giant pipeline from Houston, Texas, to Linden, New Jersey. The companies involved took this step to achieve "greater flexibility" in two ways:

1. The pipeline and spur lines will move more refined products directly inland, thereby avoiding some of the cost of transshipments between ports and inland markets.

2. The oil companies will be able to avoid the rising costs of tanker operations and disruption of supplies caused by maritime strikes.

Construction on the project, called Colonial Pipeline, is expected to start in June 1962. It will be approximately 1,600 miles long, starting at 36 in. and tapering to 22 in., capable of moving 600,000 barrels daily. It would replace about 50 tankers (*T-2* equivalent), or about 30 per cent of all tonnage employed in this trade.

It has long been axiomatic that tankers could deliver petroleum products considerably cheaper than pipelines over equal distances. Technological changes, however, coupled with greatly increased tanker labor costs have altered substantially the comparative economics of tanker and pipeline operations.

The average U. S. tanker has grown in size from 12,300 deadweight tons to 20,000 deadweight tons. Ships of 26,000 dwt. up to 50,000 dwt. are common to the domestic trade. The economies of bigness, however, are limited by inflexibility, small groups of individual shippers, terminal and harbor capabilities. Moreover, inflated tanker operating costs more than offset the advantages of larger vessels.

Meanwhile, pipeline diameters have expanded from 12-in. to the 36-in. proposed for the Colonial Pipeline. Automation improves efficiency and reduces labor requirements. Although the Colonial pipeline cost of \$360 million exceeds the \$300 million cost of identical tanker capacity, the pipeline is advantageous in power and utilization is said to offset the difference.

The March 5, 1962 issue of the *Oil and Gas Journal* points out that, admittedly, tanker costs are capable of further reduction through simplified designs and shipboard automation. Any significant reduction in crew size, however, might be resisted bitterly by a tanker labor force which has lost almost 7,000 jobs since 1948. Apparently, the oil companies would rather face the issue of Government policy with respect to import controls than wrestle with the labor question. A possibility exists that during the 30-year amortization of the pipeline,

foreign crude may be allowed to enter the United States in increasing volume. This would present a grave problem to the nine refineries in the Gulf which use domestic crude. This emphasizes the labor perplexities confronting the merchant marine.

THE DRY BULK CARGO FLEET

Our dry bulk cargo fleet is the only element of the maritime industry that has increased impressively over 1939. This fleet, nevertheless, contains substantial weaknesses. At the end of 1961, there were only 79 active tramp vessels. All are war-built and are of an obsolete design. The economics of the trade, however, do not allow an American company to replace bottoms in the United States, even with a subsidy for a construction differential because of higher operating costs in comparison with foreign competition.

The volume of dry bulk foreign trade has fluctuated widely in the postwar period, but the trend is up. In 1960, bulk cargoes were 40 per cent above 1951 when U. S. flag participation was at a peak. In 1951, we carried 39 per cent of our bulk trade in U. S. flag vessels, whereas in 1960 the percentage fell to less than 8 per cent. In recent years, the tramp fleet has existed solely by reason of 50-50 cargoes. Even though last year showed a slight increase in world trade, bulk freight rates were still well below the break-even point for U. S. flag vessels. For example, in 1961 the movement of coal in our export trade amounted to 22 million long tons. Virtually all this cargo moved by foreign flag ships except for military shipments to Germany. Even this movement was scheduled to move by foreign flag until the industry protested, pointing out that by law this cargo had to move on available U. S. ships. United States exports of agricultural commodities reached the highest level on record in 1961. However, the use of idle tanker tonnage in the movement of grain was instrumental in keeping bulk dry cargo freight rates from making any substantial gain. Of the 6,238,000 long tons of Department of Agriculture aid cargo transported by U. S. flag vessels in 1960, tramp ships carried 40 per cent, liners took 21.5 per cent, and tank vessels hauled 35.5 per cent.

INDUSTRIAL CARRIERS GO TO FOREIGN FLAGS

Recently, Bethlehem Steel Corporation was denied a construction differential subsidy to build two new 51,000-ton bulk ore vessels which would have been put under American flag. Our bulk ore fleet consists of 6 aging ships despite an increase in iron ore imports of 20 million long tons between 1950 and 1960. The two Bethlehem ships will now be built abroad and operated under a foreign flag. In spite of the importance of bulk carrier tonnage to assure an uninterrupted supply of raw materials, Washington has apparently decided against these vessels under U. S. flag.

The United States liner service fleet today is more than twice the 1939 fleet in number of ships. As 1962 began, we had 416 freighters employed in liner service. Seventeen of these ships were also industrial carriers. Since 1951 our liner trade has increased by one-third when almost 50 per cent of this trade was carried aboard U. S. flag vessels. By 1960, U. S. flag participation had fallen below 30 per cent with a net loss to its liner fleet of almost five million long tons of cargo.

Subsidized operators have signed replacement contracts with the government for almost 300 vessels. Twenty-six cargo vessels have already been delivered and 53 vessels were on order as of January 1, 1962. As 1962 began, there was not one single vessel on order or under construction for non-subsidized deep sea operation.

SUMMARY

We face the future with little basis for optimism. Labor costs stabilized in 1961, to a considerable degree, as the result of contract renewal negotiations for member companies of the AMMI. After an 18-day strike, four-year agreements were reached with the NMU, MM&P and ARA, and a three-year agreement was reached with the MEBA. For the first time, we can look forward to at least three years of uninterrupted operation. Strikes have curtailed shipping operations for one or more segments of our industry for prolonged periods in 1934, 1935, 1937, 1939, 1946, 1948, 1951, 1952, 1953, 1958 and 1961. This horrendous record has shaken the confidence of shippers in our merchant marine and helps to explain, perhaps, the relatively low U. S. flag participation in waterborne commerce. In 1961, we carried about 11 per cent of U. S. trade in American bottoms as compared to the Japanese who carried more than 50 per cent of their trade in Japanese bottoms in 1959.

Industry and government research in cargo handling, shipboard automation, new propulsion systems, and ship construction promise greater industrial efficiency. Much remains, however, to be done in the area of maritime research.

In his recent Transportation Message, President Kennedy recommended a stepped-up research program:

"I have also recommended a stepped-up research program for developing ways and means of increasing the competitive efficiency of our merchant marine and related industries. Of particular significance in this effort will be the application of the principles of mass production in the cost of new vessel construction. Also I am urging that sound development in technology and automation be applied to merchant shipping as rapidly as possible, fully recognizing and providing for the job equities involved, as a major program for enhancing the competitive capability of our merchant marine."

We support these objectives.

EVALUATION OF THE MAJOR FACTORS WHICH HAVE INFLUENCED MERCHANT MARINE POLICY IN THE POSTWAR PERIOD

Elmer E. Metz

I have been asked to give an evaluation of the major factors which have influenced merchant marine policy since 1945. This is a broad subject, and calls for compressing some seventeen years into a period of twenty minutes or so. We can agree, certainly, that this period has been most important to the United States and, with regard to American shipping, it has been crammed with questions of policy. To underline the significance of the era we are discussing, an historical survey would be in order.

MARITIME SUPREMACY AND POLITICAL POWER

Since earliest times, there has been an interconnection between merchant shipping and political expansion. The Phoenicians, Venetians, Spanish, Dutch, French, and English were outstanding because of the extent of their merchant fleets whose boldness led to the age of discovery. New sources of trade soon followed in which the early American merchant marine played a part. Although the American commercial fleet aggregated only 123,000 tons in 1789, its problems could not be overlooked. For example, foreign ships seemed to have an advantage over U. S. vessels at this time. Having a great larder of natural resources to draw on that were in great demand abroad, American bottoms were almost assured of eastbound cargoes. Because demands for European goods were low, however, imports were few, thus creating a problem. Accordingly, at the first session of Congress, American merchants (who often were shipowners, as well), stated their case:

Your Petitioners, on whichever side they may turn their eyes, see reason to believe that the United States may soon become as powerful in shipping as any nation in the world. Permit us to add that for want of national protection and

Elmer E. Metz, Executive Director, Federal Maritime Commission.

encouragement, our shipping, that great source of strength and riches, has fallen into decay and involved thousands in the utmost distress.

The Congress listened to the plea of the mercantile community, and voted that it would be the policy of the United States henceforth to ease the plight of American shipping. The first act passed by the Congress under the new Constitution contained a clause that allowed a discount of 10 per cent on goods shipped in American bottoms. The Congress also turned its attention to the working conditions of merchant seamen, passing legislation stipulating written contracts that specified wages and voyage responsibilities. In one form or another, the interest of the Congress in the merchant marine has continued.

THE MERCHANT MARINE AS AN ARM OF NATIONAL POLICY

Perhaps more than any other factor, shipping is a major artery of foreign policy as recent American history shows. For nearly thirty years, the United States has sought to maintain better ties with Latin America. The late President Roosevelt instituted the Good Neighbor Policy of which the Alliance for Progress of President Kennedy is a sequel. These programs depend upon shipping for realization in the national interest. Unless the United States has adequate transport, it would be vain to speak of building sound connections with the nations to the south. Although foreign countries could offer ocean transport in full or in part for this program, they would not fulfill U. S. objectives as completely as America itself. And in the future, shipping will be increasingly important for the United States if the intention of its people to participate in international affairs is a reliable guide.

The commitment of the American people to the maintenance of peace has an intimate association with shipping. Rockets and nuclear bombs notwithstanding, collective security also requires ships. We hope, therefore, that our friends abroad will understand this and sympathize with our efforts to nurture our merchant marine. An adequate U. S. flag fleet is one of the basic tools to keep the peace. Indeed, the geographic position of the United States virtually emphasizes this.

THE GEOPOLITICAL ROOTS

What are the geographical factors that allow the United States to enjoy the benefits of sea transport and how have these, in turn, helped to influence maritime policy?

The United States has access to two oceans. It occupies a strategic position astride world trade routes. It has 7,000 miles of coastline. It has more than 60 deep water ports which are mostly free of ice. It has 28,000 miles of inland waterways. In the heart of the country are the St. Lawrence Seaway and majestic river systems. It is no

wonder that water transport is essential to the political and economic welfare. Because it is a link with the world, shipping is a sensitive current in the swift tide of ideas. The sixteen years since 1946 attest to this.

INDUSTRIAL AND POLITICAL REVOLUTIONS AND U. S. MERCHANT MARINE POLICY

Since 1946, the world has become smaller because of technological changes. As a result, the United States has had close touch with the three revolutions that have been afoot. First: there has been the Communist revolution that challenges the United States in Asia, in Cuba, and, to a minor extent, in Europe; second: the industrial revolution, although this is not exactly new for it has been with us since the 1800's. The technological changes of which we speak are only its modern phase.

Finally, there has been a social revolution which is convincing peoples of the earth, particularly those of underdeveloped countries, that it is possible to have a higher standard of living and a better life. The Alliance for Progress is trying to assist this revolution. At times, these radical developments mingle. In the background, as well as a motivating force, is Soviet imperialism which seeks to enmesh the desire for social and economic change. In endeavoring to channel the social revolution toward the service of the Free World, U. S. merchant marine policy has played a notable part. This was a consequence of World War II.

In one respect, the ends of World War I and World War II were the same. After both conflicts, there was a surfeit of merchant ships. With the coming of peace or relative peace in 1918 and 1945, what to do with the great merchant fleet that had been built to win these wars was a problem. In 1918, the United States reached second place among the maritime nations; in 1945, its position was unrivaled. Its shipbuilding capacity was greater than the rest of the world combined. A question of policy had to be faced: What was the United States going to do with this vast investment? The answer was to rebuild what had been destroyed. In providing relief cargoes for Western Europe and to the newly independent nations of Africa and Asia, the U. S. Merchant Marine, as an instrument of U. S. foreign policy, helped to contain Soviet imperialism and to assist the continuing phases of the industrial and social revolutions. At the same time, the United States encountered another problem. This was to find a precise relationship between shipping and foreign trade.

THE PLACE OF THE U. S. MERCHANT MARINE IN U. S. FOREIGN TRADE

It should be said, at the outset, that this is not a new problem. It has been with us for years. We can note outcroppings of this issue

in the Congressional debates over the foreign trade policies of the present Administration. What are the points of dispute?

Proponents of a strong merchant marine hold that vessels subject to American control are needed for several reasons. They say that it is required to generate trade, to assure reasonably sufficient service for American goods, to keep rates in line, and, perhaps most important, to protect U. S. shippers from possible discrimination by foreign steamship lines. On the other hand, some economists disagree. They point out that shipping itself is a form of trade. They think that the more we export in unprofitable ship services, the less likely we are to sell other items more profitably. In the formation of over-all U. S. shipping policy, both points of view have been taken into account.

American flag shipping, despite promotion by the Government, continues to lift only about 10-12 per cent of the total foreign commerce of the United States.

There is little in the record to indicate that present-day ships, of themselves, create trade. The roots of trade go far deeper than the means of delivery. They are imbedded deeply in the soil of consumer demand, purchasing power, and stable international relationships.

In high Government circles, there has been a belief that shipping lines can help to stimulate the exchange of goods and some shipping lines have aggressively sought to create cargoes by showing American goods and introducing foreign goods to possible American markets. But in the over-all picture there is too little evidence that these practices are being aggressively pursued. I do not think it is unfair to say that our policies have been weak on trade promotion in the past. It would strengthen, not only the Merchant Marine, but the case for a Merchant Marine if our lines could and would do more in this direction.

Now, while ships themselves may be secondary in the creation of trade, we do find that continuity of shipping services is of great importance to the development of foreign trade. We have found that where subsidized American lines have serviced trade routes faithfully, they have been a stimulant to the creation of trade. American lines were able to attract a larger portion of such trade. One fundamental postwar policy was based on the concept of assuring continuous shipping service on the Essential United States Trade Routes over a protracted period. This was a prime factor in our present twenty-year subsidy contract.

SUBSIDIES AND SALES OF WAR SURPLUS SHIPS

When the *Merchant Marine Act of 1936* came into being, the Government embarked on a program for the payment of subsidies to promote U. S. shipbuilding and U. S. flag ship operations. The Government agreed to pay that portion of certain items of the cost differential

between the higher United States cost of building ships in U. S. shipyards and operating U. S. flag ships and the lower cost to the foreign competitors of building and operating similar vessels abroad or under foreign flags.

By the end of World War II, the merchant fleets of our allies were practically destroyed. The same was true of the U. S. privately owned lines. All had to be revived and rebuilt as the U. S. Government owned practically all of the merchant ships that then were carrying the supplies to war stricken and starving areas. Neither the nations nor the privately owned shipping companies, however, had the resources to pay for building new ships. It was only logical that the United States, owning approximately 3,800 merchant ships—certainly more than it then needed for strictly Government operations—passed the *Merchant Ship Sales Act of 1946*. This Act made possible the sale of ships to foreign nations and foreign ship operators until March 1948 and to U. S. citizens until January 1951, all at a small percentage of domestic war cost. The Act also allowed the charter of war-built vessels to U. S. citizens at most reasonable rates of hire. One thousand nine hundred and fifty-six ships were sold under this Act: 1,113 to foreign citizens, and 843 to U. S. citizens. Thus, the merchant fleets of U. S. citizens and of our allies were rehabilitated and revived. By this willingness to share our shipping assets with our friends our international relations were strengthened.

This policy proved a powerful catalyst to the economies of the nations which acquired these ships. In this respect, it was an outstanding demonstration of an intent to stand with our allies against the eroding influences of Communist aggression which began to re-emerge immediately after the war.

After World War II, we revived the subsidy program, by renewing operating differential subsidy contracts suspended during the war. Realizing that these war-built ships with which operators were reinstating their subsidized services on essential U. S. trade routes would create ultimately a problem of block obsolescence, the United States insisted that the new operating subsidy contracts contain provisions requiring operators to contract for the construction of new ships to replace older ships. The replacement schedule has been phased so that the companies will be able to finance the replacement better and that the companies will be able to finance the replacement better and so that the U. S. shipyards will be able to use their capacities better over a longer period of years. Since these new building programs required a financial obligation involving many millions of dollars by each subsidized operator, the operators were loath to so commit themselves with only a ten-year commitment on the part of the Government to pay subsidy. Therefore, the United States modified its former policy of granting such contracts for only ten years and began giving

twenty-year contracts. Since the new ships now had to be planned to be used for twenty years, certain new features, such as faster speed, better cargo handling gear, etc., were essential to meet growing competition that could be expected from foreign competitors over longer periods. Anticipated changes in trade areas also dictated some changes due to expected change in types of cargo to be carried during the ensuing twenty years.

SHIPPING AND NATIONAL SECURITY

Now in the last five years there has been much talk in shipping and defense circles questioning the use of the merchant ship as opposed to nuclear, space, and rocket devices in modern warfare.

It is important, I think, to note that while there have been suggestions that ships are perhaps no longer necessary in modern warfare, nevertheless, no responsible defense or shipping official has ever agreed.

As for postwar shipping policy, we have many times weighed the question of our National Defense Reserve Fleet. We have considered plans that range, on the one hand, from scrapping the entire reserve fleet to improving readiness of the fleet, on the other.

When the *Ship Sales Act of 1946* expired on March 1, 1948, the fate of our merchant ship stockpile was debated. On June 25, 1950, the Republic of Korea was invaded. Our ability to respond in this crisis was possible only because the U. S. was able to draw upon our reserve fleets and put into operation some 600 reserve merchant ships.

Before Christmas of 1950, the President had declared a national emergency. As 1951 began, Congress gave the new Maritime Administration the funds with which to produce a new type of American Merchantman, the Mariner Ship. We built 31 Mariner Ships at an approximate cost of \$283,600,000, thus creating many jobs for Americans in shipyards. These ships later became much in demand and most ships built since then have incorporated many of the characteristics of these ships. In March of 1951, we had to establish the National Shipping Authority to meet the vital needs of Korea. The Korean crisis created an urgent need for increased tonnage. Many of the ships in the reserve fleet were withdrawn, reconditioned, and operated by the United States under general agency agreements with U. S. citizen operators as agents for the United States.

NEW SHIP FINANCING

Before 1952, much new ship construction was financed with U. S. Government loans to operators at a 3½ per cent interest rate. The Eisenhower Administration, however, promoted private financing of such construction. It was believed the Government should not borrow money needed for such loans to industry but that private lending

institutions should advance the needed capital and that the Government should encourage private financing through a liberalized Government insurance of such loans. While for many years before there was a program for such insurance, it did not prove adequate for a number of reasons. On default in the private loan or mortgage foreclosure, proceedings had to be taken and the only Government obligation after such default was to issue 10-year U. S. Government debentures to the lender. The lender had to await reimbursement for its loans over a period of years. Congress amended the law to require prompt payment in cash by the Government of 100 per cent of the unpaid principal plus 100 per cent unpaid interest accrued on the loan or mortgage to date of payment. Other liberalizing amendments were passed with respect to amount of insurance obtainable.

As of February 28, 1962, the Maritime Administration had executed contracts of insurance for 53 vessels amounting to \$396,464,356 and commitments to insure mortgages covering an additional 13 vessels in an aggregate amount of \$75,276,900. Together these cover 66 vessels in aggregate amount of \$471,741,256. As of the same date, the unpaid principal balance on the executed contracts of insurance covering the 53 vessels aggregated \$357,125,915. Moreover, the Administration has issued what might be termed contingent commitments to insure loans or mortgages pursuant to Section 1107 of the *1936 Act*, aggregating approximately \$163,000,000. In addition to the above, the mortgages of seven vessels which had mortgages totaling \$16,169,-103 have terminated, either by payment or by foreclosure.

The new *Title XI Mortgage Insurance Law* made it possible for companies, both large and small, to obtain long term loans, sometimes as long as twenty years, to furnish the money needed to finance new ships. Theretofore, private lending institutions were seldom interested in such loans because of the great risks involved caused by the many and sudden changes in the economic prospects of shipping ventures.

While many ships have been built under this procedure, costs to ship purchasers are high because of the higher rates of interest charged by private lenders. In addition, the insurance premiums paid to the Government must also be borne by the purchaser mortgagors. Higher costs are said to be one of the reasons why the sister ship to the *SS United States* has not been built. Other reasons, such as increasing air competition, also contributed to the failure to build a second superliner.

FOREIGN AID AND U. S. SHIPPING

Various aid and assistance programs carried on by the Government to help foreign nations expanded the urgency for U. S. flag ships to act as good-will ambassadors to needy peoples of the world. As a result

of the *Truman Doctrine*, passed in March 1947, U. S. flag ships carried \$400,000,000 worth of cargo to keep Greece and Turkey within the family of democracies. In April 1948, the *Marshall Plan* came into being when Congress passed the *Foreign Assistance Act*. Again U. S. flag ships carried thousands of tons of supplies to rehabilitate allied nations.

No assessment of U. S. shipping policy would be complete without mention of cargo preference. Here again we examine a factor that goes back well beyond the war period. *Public Resolution No. 17* was approved by President Roosevelt March 26, 1934. It stated that it was the purpose of the Congress, in loans made by instrumentalities of the Government, that the cargo so generated should be carried exclusively on vessels of the United States unless waivers were granted.

At the end of hostilities in 1945, there was objection, both at home and abroad, to the policy requiring the application of *Public Resolution No. 17* on a 100 per cent United States flag basis. It was later agreed between the former Maritime Commission and the Export/Import Bank that a ruling of the Office of the Attorney General showed that application of *Resolution 17* was not obligatory. Furthermore, it was added, a basis should be reached reserving at least one-half of this traffic for U. S. vessels which granted a share to vessels of other nations when such action was deemed to be advisable.

In the postwar period, the 50-50 cargo preference provision was generally applied to the various so-called aid cargoes. In general, this cargo is not considered "commercial cargo" within the accepted meaning of that term. It is not held to be a normal movement of cargo but a movement arising from unusual economic and military conditions. It should be pointed out that the policy of reserving not less than 50 per cent of the "aid cargoes" to U. S. flag vessels as provided for by *Public Law 664*—83rd Congress is deemed most vital by United States shipping.

There has been criticism of the 50-50 provisions on the ground that the cost of transportation would be less if the materials were handled entirely by foreign flag recipients of the aid. As in most generalizations, this statement must be qualified. Of course, a preference in favor of U. S. ships is denounced by foreign nations as discriminatory and contrary to the principles of fair international trade. Nevertheless, the question of cargo preference policy remains under study. The President has appointed a committee to inquire into this problem which is now considering the matter. Let us, for a moment, look at the U. S. tanker fleet.

THE U. S. TANKER FLEET

Tankers have a unique place in the American Merchant Marine.

They get little public notice, yet they comprise a fleet of great importance to the national defense and to the national welfare. When the war ended, the tanker fleet, notwithstanding some weaknesses, was a bright spot in American shipping. Replacement, the bogy of dry cargo carriers, was not a problem for tankers. Tanker owners, consisting largely of the major oil companies, were able to finance generally the replacements required to rejuvenate their fleets. They were fortunate also in being able to draw on the Government fleet for most of the bottoms needed for postwar operations.

In setting up its planning policies, the Maritime Administration directed its attention to the tanker field very early. Construction was encouraged through "trade-out" and to build proposals and, later, by trade-in and build proposals. But, despite this aid, when the possibility of a long closing of the Suez Canal faced us, near panic conditions arose concerning the movement of oil. The sealing of the short route through Suez not only created a demand for more tankers but also motivated plans for larger tankers.

Once again it was noted that wars and warlike incidents often excite an enormous demand for ships. However, too often, the causes for this expansion disappear before the ships are delivered. An excellent example of suddenly rising demand, feverish construction, a subsequent over-tonnage, followed by stagnant charter market, was the closing of the Suez Canal. For a while, approximately 995,000 tons of privately owned U. S. flag tankers of some 6,289,000 deadweight tons in being were idle during the second quarter of 1959. Yet, in that same year, there were about 1,366,000 deadweight tons of privately owned U. S. flag tanker ships under construction, most of which were financed under the Title XI mortgage insurance program.

The tanker industry provides a rather good case of how paradoxical American policy can be toward merchant shipping. During the years that the tanker fleet was bolstered, the construction of the "giant tanker" of 106,000 deadweight tons was encouraged. Suddenly we found a situation developed in which the American oil producers complained that the mounting imports of foreign oil into the U. S. market endangered their ability to sell American produced oil and to stay solvent. Accordingly, the Eisenhower Administration curtailed oil imports. A contradiction seemed to appear. The Department of Commerce pointed out that, on the one hand, we were encouraging the construction of "giant tankers" and extending credit for such construction under Title XI, yet were pursuing an oil import policy which made it impossible for our tankers to earn the necessary income to meet their obligations. Let us now consider the railroads, which can offer faster delivery at the same or lower rates, and have practically destroyed the domestic and intercoastal waterborne trade. We have witnessed the disappearance of intercoastal waterborne carriers, one

by one. Many other factors influenced the United States Merchant Marine during the postwar period. I shall point out a few.

WAYS OF MEETING HIGHER COSTS—R & D

1. Increased wages of American workers not only raised direct labor cost to U. S. operators but have raised the price also of most of the supplies and materials bought by them in an effort to comply with the U. S. policy of requiring such ship operators, wherever practicable, to use and purchase only products of American growth, production and manufacture.

Ever rising costs of American labor necessarily forced shipowners to look for other ways to meet the higher operating expenses. They know that only a partial amount can be recouped by higher freight rates. As a result, research and development programs now form a part of the activities of a number of steamship companies and others are considering plans to form some sort of cooperative organizations to conduct such programs for their common good.

2. The Maritime Administrator has announced a plan to encourage subsidized operators to contract for new ships in groups of standardized ship design in order to obtain lower costs of construction.

3. The President's proposal set forth in the *Trade Expansion Act* of 1962 and the European Common Market offer possibilities for improving the plight of waterborne carriers, including U. S. flag ships. They also offer methods to counter the all-out trade and aid offensive of the Sino-Soviet Bloc.

U. S. SUPERVISORY ROLE

Another factor not only has affected the U. S. Merchant Marine but, if we listen to statements of foreign governments, also greatly bears on the shipping of all countries engaged in international trade.

This factor is a production of the first session of the 87th Congress. Specifically, I refer to the following:

Approval of Reorganization Plan No. 7, which abolishes the Federal Maritime Board and separates the regulatory responsibilities from the tasks of promoting and fostering the U. S. Merchant Marine. The latter functions were left with the Maritime Administration of the Department of Commerce. The Federal Maritime Commission, an independent agency composed of five commissioners, was created to exercise regulatory jurisdiction over common carriers, independent ocean freight forwarders and terminal operators.

Passage of *Public Law 87-254* and *Public Law 87-346* by the first session of the 87th Congress will greatly influence the U. S. Merchant Marine. How and to what extent we cannot be certain at this time. *Public Law 87-254* relates to freight forwarders and will not, in my opinion, affect the merchant marine as much as the provisions of the

other statute pertaining to dual rate contracts, the self-policing of SS conferences and the requirements for filing of all tariffs by common water carriers engaged in the foreign commerce of the United States and by conferences of such carriers. As for these filing provisions, Mr. Thomas Stakem, Chairman of the Federal Maritime Commission, had some comments to make recently. He said that certain foreign governments seemed to misunderstand the intent of the law which was not, he emphasized, to exercise control over international shipping. On the contrary, he pointed out that the law recognizes and strengthens the self-regulating functions of steamship conferences. But, he added, if they are to remain beyond anti-trust violations, they must expect some supervision.

Mr. Stakem added that the United States proposed to treat the steamship lines of U. S. citizens and foreign companies equally. "At no time," he said, "have we asked foreign flag carriers to do anything that we would be unwilling to have a foreign government require of our carriers."

While I abhor statistics, I find my subject requires at least some reference to them.

TWENTY-FIVE YEARS AGO AND TODAY

In 1936, when the father of President Kennedy was called to Washington to head the U. S. Maritime Commission, a leading magazine estimated that an American merchant marine would cost the U. S. taxpayer \$9,000,000 a year. It asked editorially, "Is it worth it?"

Well, in answer to that question, we finished World War II with the expenditure of \$12.4 billion in building the "bridge of ships" that so materially helped the Allied powers to achieve victory over the Axis. The Government's expenditure on the merchant marine since 1945 has fluctuated. In fiscal year 1946, when we were extricating ourselves from wartime outlays and reducing our personnel, the entire budget of the old U. S. Maritime Commission comprised only \$28,287,450.

Five years later, in fiscal year 1951, at the height of the Korean emergency, the Congress approved a budget of \$401,803,870 for expenditure on United States shipping. In fiscal 1955, in a world situation of relative peace and normalcy, the budget of the Maritime Administration and the Federal Maritime Board, for the merchant marine directly, came to \$213,960,000.

Analysis of the 1955 budget would show that the operating-differential subsidy, which in 1951 was \$26,000,000, had now risen to \$115,000,000.

In fiscal 1958, another year in which relatively stable world conditions prevailed, the budget of the Maritime Administration and Federal Maritime Boards totaled approximately \$111,841,364.

In the 1960's, under fairly stable policies and programming, the nation is spending about \$300,000,000 per year on the merchant marine. The 1960 budget allows \$130,250,000 for ship construction and \$152,750,000 for the payment of operating-differential subsidies.

In fiscal 1962, the budget of the Maritime Administration totaled \$305,000,000 with \$98,000,000 permitted for ship construction and \$182,000,00 for operating-differential grants.

To put into effect its shipping policies, today's expenditures by the United States are expected to total \$300,000,000 during fiscal 1963.

Again, to demonstrate the variation in our expenditures that our policies bring about, an examination of the ten years 1947 through 1956 shows that the actual operating-differential subsidy payable to the American Merchant Marine amounted to some \$612,000,000. This means that the privately owned and operated fleet cost the taxpayer in that ten-year period, for operation, about \$61,000,000 per year. These figures are as of June 1, 1961, and as shown in the Report of the House Anti-trust Subcommittee of the Committee on the Judiciary dated March 1, 1962.

Now this yearly cost is climbing, but we are getting more service and more ships on our trade routes for the money we are spending on our approximately 200 subsidized vessels. If our subsidy policy, as we face the future, were to grant available subsidy-aid to all ships now seeking it this would bring an increase of approximately 50 per cent or, let us say, our subsidized fleet would rise from 200 ships to 349 ships. Under these conditions our operating-differential subsidy bill could also be expected to rise about 50 per cent.

Now our replacement provisions also call for the Government to supply construction subsidy. On a basis of 10 ships per year, the cost to the Government would be about \$130,000,000 annually, using present prices as a guide.

We could say at this time, providing our policies continue to supply applications for subsidy aid, that our subsidy bill per year could reach a level of between \$375,000,000 and \$400,000,000. I think we can honestly say that the current expenditures below this sum are in reality a bargain to the American taxpayer and reflect careful administration and conservative fiscal approaches.

Nevertheless, \$375,000,000 to \$400,000,000 is a substantial sum, but contrast this with the fact that it cost the Government 12.4 billion dollars to build the World War II merchant fleet.

For the last few years, over \$6,000,000 a year has been put into research and development, exploring such fields as atomic propulsion, turbine propulsion, hydrofoil applications and automation. The results in these fields continue to be under evaluation and study. In a recent message to Congress on transportation, the President recommended a stepped-up research program for developing ways to increase the

competitive efficiency of our merchant marine and related industries, stating that of particular significance in this effort would be the application of principles of mass production and the standardization of ship types and ship components for reduction in the cost of new vessel construction. He also urged that sound development in technology and automation be applied to merchant shipping as rapidly as possible. He designated the Secretary of Commerce to develop a comprehensive transportation research program for later consideration by the Congress.

SUMMARY

Fortunately, we Americans are a restless and creative breed. In merchant shipping, we have been quick to sense opportunity where it exists and fast to respond. Our mercantile history has been one of rapid change and rapid adjustment to change. To maintain the highest living standards in the world, our way of meeting adjustment and change with forthright and meaningful shipping policies must continue. I am certain that they whom history has charged with the solemn responsibility of America's destiny on the high seas in these fateful days will carry out that responsibility with vigilant attention both to the perils and opportunities of this shrinking globe.

Today there are opportunities before us which yesterday would have seemed fantastic. We can realize these opportunities through soundly applied policies if we have the imagination and the exuberance of spirit to continue to act with courage and decision.

WHAT IS THE MILITARY NEED FOR A U.S. MERCHANT MARINE FOR THE LAST THIRD OF THE 20TH CENTURY?

Considering Changes in Methods and Technology of Military Activities and of Air Transport

Capt. B. A. Lienhard

Three-quarters of a century ago, Admiral Alfred Thayer Mahan began the first chapter of his famous work, *The Influence of Sea Power Upon History*, with this observation:

The first and most obvious light in which the sea presents itself from the political and social point of view is that of a great highway; or better, perhaps, of a wide common, over which men may pass in all directions. . .*

Somewhat along these lines, Admiral George W. Anderson, Chief of Naval Operations, concluded his testimony on naval strategy before a committee of the Congress in January 1962. In the course of his remarks, Admiral Anderson touched on the interconnection of the maritime and naval aspects of national strategy and suggested that ". . . they are and will continue to be the keystone of the arch of our security." The maritime position of the United States, in his words, is ". . . a tool of victory only so long as we exert ourselves to exercise the advantages that it offers." To fail to do so, he warned, would be perilous. Now, in what way do the judgment of a renowned naval historian and the recent evidence of the Chief of Naval Operations pertain to the subject at hand?

Geographically, Admiral Mahan's "wide common," or "great highway" encompasses almost four-fifths of the earth's surface and we must strive to utilize effectively the United States Merchant Marine as well as the Navy to achieve the advantages which the oceans of the world offer us to promote our commerce, safeguard our security, and advance the cause of the free nations of the world. "Let us fail to do

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* Alfred Thayer Mahan, *The Influence of Sea Power upon History, 1660-1783*, Boston; Little, Brown and Company, 1918.

so and we shall see this great asset (our maritime position) become for us instead a liability of the first rank."

The Atlantic Ocean is the "wide common" around which are located our allies in the North Atlantic Treaty Organization (NATO). The Pacific Ocean provides the "great highway" which connects our allies in the Southeast Asia Treaty Organization (SEATO). The United States Seventh Fleet, patrolling the waters of the Western Pacific, and the Sixth Fleet, constantly on guard in the Mediterranean, are examples of the strategic mobility of our seapower for peace. The principal commercial transportation link to our Latin American neighbors to further President Kennedy's Alliance for Progress is furnished by the merchant ships which sail the "great highway" of the Caribbean, the South Atlantic and the Southeast Pacific. In the words of Admiral Anderson, "... the maritime or naval aspects of our national strategy are and will continue to be the keystone of our arch of security".

Those who have studied the advantages which the sea offers for strategic mobility, as well as men who have gone to sea in ships either in the merchant marine or the navy, will readily appreciate the validity of the quotations of Admirals Mahan and Anderson. As an industry, the merchant marine has a traditional community of interests with the navy. Basically, both the navy and the merchant marine believe that America's destiny lies in large measure in maintaining and improving its position as a maritime nation.

To give appropriate reply to the question, "What is the military need for a U.S. Merchant Marine in the last third of the twentieth century?", I propose to seek answers to the following points:

First, what do we mean by "military" need, and can the requirements of the armed forces for a U.S. Merchant Marine appropriately be considered in isolation from "national defense", "political-economic", and "economic" requirements for a U.S. Merchant Marine?

Second, what are the major military threats with which we are likely to be faced in the last third of the twentieth century and what is the military requirement for a U.S. Merchant Marine to meet each of these?

Third, what can we learn that is pertinent to our question from the history of transportation experiences, changes and advancements which have occurred in the first two-thirds of the twentieth century?

Fourth, what impact can we expect on our military need for a U.S. Merchant Marine resulting from:

- a. The change in status of the U.S. from a nation relatively self-sufficient in raw materials to a nation increasingly dependent upon the importation of many vital minerals and resources?
- b. Technological advances in ship design and construction?
- c. Changes in methods and technology of our military activities and

advancements in and expanding capacity of our air transport capability?

Fifth, do the answers to the preceding questions provide us with a valid base from which to predict whether there is a military need for a U.S. Merchant Marine in the last third of the twentieth century?

Many surveys have been made since World War II to determine what our needs are and what our actions should be with regard to a merchant marine. There have been studies to determine the requirements for a U.S. Merchant Marine to meet the wartime Armed Forces requirements; analyses to determine National Defense requirements; and efforts to determine economic requirements. In 1950, and again in 1961, there was a reorganization of the Maritime Administration and Commission. Committees of Congress have conducted extensive hearings concerning the problems existing in the maritime industry. Thus, it is with humility that I approach the subject for discussion. I wish to express my gratitude to those whose extensive knowledge of merchant marine matters and contributions to these studies have provided much of the background enabling me to tackle this subject.

SEEKING ACCEPTABLE DEFINITIONS AS A POINT OF DEPARTURE

What do we mean by military need? Webster's *Unabridged Dictionary* provides the following first- and second-choice definitions of *military*:

1. Of or pertaining to soldiers, arms, or war; belonging to, engaged in, or appropriate to the affairs of war . . .

2. Performed or made by soldiers; supported by Armed Forces, as a military expedition, government.

The first definition is clearly broader in meaning. In the course of this discussion, when there is need to differentiate, we will refer to that broader connotation in Webster's first choice by the term *national defense*, and to the more restrictive context of the second choice by the terms *purely military* or *armed forces* needs. Furthermore the term *national defense* will denote: (1) the direct requirements of the Armed Forces, (2) concomitant requirements of our industrial machine to produce the equipment and materials needed by the Armed Forces, and (3) the concurrent requirements of our civilian economy. On the other hand, *purely military* will be limited to a narrower context, the direct requirements of the Armed Forces.

I have attempted to distinguish between these two acceptable usages of the term *military need* for the reason that they seem often interchangeably employed, thus leading to confused thinking. The purely military need for a merchant marine consists of the ships, transports, cargo vessels, or tankers, which are required to carry troops, equipment, and supplies of the Armed Forces. The determination of these requirements is the responsibility of the Department of Defense.

THE REQUIREMENTS OF DEFENSE AND COMMERCE

The needs of national defense for a merchant marine transcend the functions of the Department of Defense and include also the requirement for ships to carry essential export-import trade. This includes especially those critical materials in which we are no longer self-sufficient; the requirement to supply the U.S. industrial machine to help it produce the munitions of war needed by the Armed Forces; and the obligation to produce goods and equipment to support the civilian economy. Shortly after World War II, the Office of Defense Mobilization (ODM) was formed to develop these tasks. Later, ODM became the Office of Civil and Defense Mobilization (OCDM). In the past year, it became the Office of Emergency Planning (OEP) and some functions formerly performed by OCDM have been assigned to agencies other than OEP.

From the foregoing, it is evident that purely military needs, those of the Armed Forces, are only a part, perhaps a substantial part, of national defense requirements for a U.S. Merchant Marine.

Is there likewise a relationship between political-economic or economic requirement which may exist for a U.S. Merchant Marine and our national defense and purely military requirements, or can each be considered in isolation?

POLITICAL-ECONOMIC REQUIREMENTS

By political-economic, we mean the employment of the U.S. Merchant Marine not only to promote U. S. commerce, both export and import, but also to further U.S. national objectives by "showing the flag", delivering the products of the economy to world-wide ports, carrying aid to underdeveloped nations, as well as insuring that the United States has at least some national control of its sea transport capability needed to sustain the U.S. economic base. This usage does not meet the narrower definition assigned to military needs, but it comes within the purview of the broader meaning. Our reasoning here will be discussed in greater detail in seeking to answer the second major question we have posed.

What is the economic requirement for a U.S. Merchant Marine? In 1961, the Transportation Center at Northwestern University concluded a study, *The Economic Value of the United States Merchant Marine*, which was financed by a grant from the Committee of American Steamship Lines. The subject of the review was defined to *exclude* the industry's military value.

Some interesting premises of the study are:

- a. Its purpose was analysis, not policy determination.
- b. There was a question whether the non-military value and the military value of the merchant marine could be usefully separated, but the study pointed out that it was considered important to deter-

mine the net contribution of the merchant marine to the economy of the United States besides its purely defense value.

c. The study dealt primarily with the subsidized ocean liner industry.

In this isolated context, the conclusion was reached that the U.S. Merchant Marine did not in itself constitute a benefit to the U.S. economy since the value produced did not equal or exceed the value of goods or services which might have been produced had the same resources been devoted to their best alternative activity.

On the other hand, this same research effort noted that the U.S. National Defense Reserve Fleet of merchant ships has benefited the U.S. export-import trade through withdrawals and usage. It has also resulted in savings during the Korean and Suez crises.

It is rather perplexing to learn that several hundred ships can be withdrawn from the U.S. Reserve Fleet in an emergency and be considered an economic benefit, yet the active merchant fleet, because it was in being, does not.

In the study *Economics of Defense in the Nuclear Age*, by Hitch and McKean, the following statement is made:

—economics is concerned with allocating resources—choosing doctrines and techniques—so as to get the most out of available resources;

and, subsequently, in discussing decisions on how to spend the military budget:

Strategy, technology, and economy are not three independent “considerations” to be assigned appropriate weights, but interdependent elements of the same problems.

Likewise, in considering how we should spend our national income and what resources we should allocate to the merchant marine, it is submitted that strategy, technology, and economy cannot logically be cast into separate and independent compartments.

A proper basis on which to determine whether the U.S. Merchant Marine constitutes a benefit to the U.S. economy is not to isolate and study one segment (about 300 ships) of the active merchant shipping (some 1,000 ships) of our total active and reserve merchant fleet (about 2,800 ships). Perhaps it would be wiser to consider whether U.S. national objectives require merchant shipping under the U.S. flag. If so, we must insure that available resources are allocated in such manner that these objectives can be achieved under various emergency conditions which may arise as well as under routine circumstances.

Clearly, the Northwestern University Transportation Study had reservations when they concluded that there was a question whether “. . . the non-military value and the military value of the merchant marine can be usefully separated.”

THE LIKELY MILITARY THREATS IN THE LAST THIRD
OF THE CENTURY

Within the past several years, many students of U.S. and Soviet strategy have tried to analyze the possible dangers facing this country. Undoubtedly, you are familiar with most of them. I would like to refer, at this point, to three which seem to have a particular bearing on this discussion. One, *The Economics of Defense in the Nuclear Age*, has already been mentioned. It appeared in 1960, as did *Project Walrus*, a study prepared by the National Academy of Sciences for the Maritime Administration. The third, *Soviet Strategy in the Nuclear Age*, by Raymond L. Garthoff, was published in 1958.

The object of *Project Walrus* was to advise on the "nature, organization and processing of a scientific research and development program" appropriate to the Maritime Administration's objectives and responsibilities. One part of the committee was "The Advisory Panel on Wartime Use of the U.S. Merchant Marine", under the Chairmanship of Admiral Arthur W. Radford, U.S. Navy (Ret.), former Chairman of the Joint Chiefs of Staff. This group was directly responsible for *Project Walrus*. After investigating the range of threats which faced the United States, the *Project Walrus Group* concluded that although there is some danger of a nuclear general war or limited military action, the more likely threat for the next fifteen years is a continuation of the political-economic warfare (cold war) which does not directly involve the military services.

The Economics of Defense in the Nuclear Age addresses itself mainly to the budgeting of future military requirements. The co-author of this book, Mr. Charles J. Hitch, is now the Deputy Secretary of Defense (Comptroller). This work looks upon three principal threats:

1. All-out thermonuclear war.
2. Limited, local action of a holding or a counteroffensive character.
3. Although a more remote possibility, a large-scale and long war like World War II; strategic bombing of cities either withheld or, if tried, would be ineffective for both sides. Such a conflict might, conceivably, differ from the War of 1939-1945 by the widespread use of nuclear weapons against military targets.

With these views, Garthoff is in substantial agreement. It is possible, therefore, to discern four potential threats: political-economic war, i.e., cold war; limited war; large-scale war; and general thermonuclear war. How should the U.S. Merchant Marine respond to each?

THE MERCHANT MARINE AND THE COLD WAR

According to *Project Walrus*, the U.S. Merchant Marine has, largely, four functions during the cold war: moving military and

commercial cargoes to the countries that the United States considers it necessary to support; showing the technology of the U.S. Merchant Marine to the world; responding promptly in the event of limited emergencies within the framework of the cold war; and, finally, servicing the ports of the underdeveloped nations to match the calls now being made to these areas by ships of the Communist bloc.

THE MERCHANT MARINE IN LIMITED WAR

An answer to this question would depend upon the magnitude of the limited war, for many possibilities would have to be considered. Would airlift be utilized (as it was, to some extent, in the Korean conflict)? To what degree could the United States count on the aid of its allies? Would there be a pool of reserve ships that could be tapped?

To illustrate the last point, it was found necessary, in the Korean conflict, to reactivate more than 600 vessels from the National Defense Reserve Fleet. These ships served two purposes. Not only were they needed to support the military effort; it was learned also that they constituted a benefit to U.S. export-import trade in preventing extreme rises in freight rates.

In responding to limited war situations, including potential limited wars such as the crisis in Lebanon, speed is essential. Initial movement by air will be advisable at times to achieve rapid reaction, but, except for very minor operations, shipping is essential for major weapons, equipment, and bulk of troops.

These paragraphs were written in 1959, and it should be noted that the advent of the large jet air transport at about that time has caused the Department of Defense to look at the improved capability it will give for rapid trooplift. When sufficient airlift and aircraft facilities are available, it can be expected that a much greater bulk of troops will move by air. In addition, the Department of Defense has been studying the possibility of increasing the quantity of prepositioned equipment and supplies in parts of the world to reduce reaction time and shipping requirements.

Nevertheless, a definite need exists for a U.S. Merchant Marine in the event a limited war arises, particularly for the transport of bulk cargoes.

THE MERCHANT MARINE AND A WORLD WAR II-TYPE CONFLICT

The massive requirements for ocean shipping during World War II are so well known that if we should become involved in a similar conflict, the needs would again be enormous. The NATO nations have agreed to commit the preponderance of their shipping to a common pool in the event of NATO involvement. In this regard, the *Walrus Report* speaks of the NATO shipping pool.

This part of *Project Walrus* says that allocations under the shipping

pool would not become fully effective until 60 to 90 days after the outbreak of hostilities. Until that time, each member of the NATO shipping pool would use its shipping to help the common effort as expeditiously as possible. Since over-all shipping needs would exceed the joint capabilities of the pool, it is anticipated, at least in the early stages of the war, that primary reliance would be placed on shipping controlled directly by the United States. As soon as allocations became effective, the report notes that the major benefit would be the optimum utilization of shipping, not availability of tonnage.

THE MERCHANT MARINE IN THERMONUCLEAR WAR

Project Walrus states that ships surviving the initial thermonuclear attack would be a residual asset in successive stages of the war. Although shipping in major ports would undoubtedly incur severe damage, vessels in minor port areas would escape the holocaust. It is estimated that shipping at sea would be 90 per cent unscathed in the first attacks. Depending on the degree of warning, it is thought that 50-75 per cent of active shipping would be free of damage. Inasmuch as it is assumed that at least 50 per cent of U.S. flag shipping would be in this category, more of the U.S. Merchant Marine would survive than any other resource. And, as a consequence, it would be of the greatest value in helping to repair the national economy.

LESSONS OF THE PAST

At this point let us review what the past two-thirds of a century can teach us concerning the requirements for a merchant marine.

First, let us consider the question from the viewpoint of the year 1896, just two-thirds of a century ago. What could be predicted about merchant marine needs in the first third of the twentieth century?

In 1896, our export-import trade, except, perhaps, for that with our neighbors, was carried 100 per cent in ships, but of course, little of it was in U.S. flag ships. The United States was then a self-sufficient nation. Its merchant marine was virtually at its nadir, never having recovered from the effects of the Civil War. United States foreign policy consisted almost solely of the *Monroe Doctrine*.

Yet, in less than two decades, upon the outbreak of World War I, the United States found itself in serious need of a merchant marine because it had relied upon others to transport the major portion of U.S. ocean-borne commerce. From 1914 to 1916, ocean shipping rates rose 300-400 per cent, and in 1916, the United States entered upon a massive merchant shipbuilding program. Little of that shipping was completed before the war ended; the United States depended largely upon her allies even for U.S. troop movements after 1917. Yet, when the ships were built, they were allowed to fall into disuse before the first third of the century ended.

By 1929, 100 per cent of our export-import trade was still being carried in merchant ships and once again a very small percentage of this commerce went in U.S. bottoms. The country was still largely self-sufficient. A large percentage of the merchant marine was engaged in the coastwise trade. United States primary interests were national, not international. Despite President Wilson, the United States remained aloof from the League of Nations.

But exactly one decade later would see the beginning of the greatest armed conflict in history; twelve years from 1929 would find the United States involved. Once again, one of the most critical shortages was merchant shipping.

The effort made in the 1940's to overcome this shipping shortage that resulted in a bridge of ships is too well known to repeat. As the United States enters the last third of the century, what lies ahead?

OCEAN SHIPPING STILL IMPORTANT

The United States is still virtually 100 per cent dependent upon ocean shipping for its export-import trade. Aircraft have made inroads upon overseas passenger traffic, but U.S. foreign commerce depends upon the ever reliable merchant ship. Again, U.S. commerce is carried preponderantly on foreign flag ships.

THE CHANGED POSITION OF THE UNITED STATES

But no longer is the United States the nation which had just conquered the frontier and, as in 1896, had virtually no foreign obligations. Nor is it the nation of 1929 which had participated in the greatest conflict up to that time and then attempted to withdraw unto itself. Today, the United States is the leader of the Free Nations of the World. It is actively involved in a political-economic struggle which threatens to erupt into open hostilities at several points.

To meet this threat, the United States needs a merchant marine larger than its predecessors in 1896 or in 1929. Yet it is, at present, a merchant marine built almost entirely during World War II, a merchant marine which each year carries a lesser percentage of our trade, a merchant marine rapidly falling into block-obsolence.

Can this situation be disregarded? Can it be contended that circumstances have so changed that, unlike the first and second thirds of the twentieth century, the United States will have no need, military or otherwise, for a merchant marine for 1975 and beyond?

FROM SELF-SUFFICIENCY TO DEPENDENCY ON IMPORTS

The United States, with only 6 per cent of the earth's population, is today the world's greatest importer and exporter. More than a

third of the total industrial production of the entire world and almost one-half the entire world output of raw materials are now channelled to the needs of the American economy.

American industry has outgrown its domestic supply base. With the exception of coal and most agricultural commodities, the country is no longer self-sufficient in natural resources. There are now notable deficiencies in tin, manganese, chromite and bauxite. We have become the world's largest importers of copper, lead and zinc, whereas once we were huge exporters. Of 72 "strategic and critical" commodities listed by the Office of Civil and Defense Mobilization (now the Office of Emergency Planning), more than 40 are entirely imported, as are portions of all the rest. Increasingly, the United States looks to Canada, Latin America, Africa, the Near East, and South and Southeast Asia for larger quantities of raw materials.

The Near East supplies nearly all of Western Europe's oil requirements and is an important exporter to the United States while South and Southeast Asia are the world's largest producers of tin and rubber and a major source of other vital materials, including tungsten, manganese and mica.

The continued expansion and competitive position of American industry depends heavily on these imports of raw materials from the primary producing countries, largely in the underdeveloped world. These imports reach the United States by ocean-borne commerce.

FOR THE LAST THIRD OF THIS CENTURY

In the future, this seems likely to continue for the United States. If the birth rate remains constant with no change in the level of immigration, the total U.S. population would increase from 180 million in 1960 to 260 million in 1980. Output for the economy overall, advancing at around 3 per cent each year, may be lifted to 4.1 per cent in the next twenty years. Such an economic growth would greatly expand requirements for many kinds of materials. They are difficult to trace since one can see only dimly the effects of new technologies, changes in demands, and possibilities for locating new sources of supplies. By 1980, however, the United States may well be one of the poorest nations in the world with respect to high-grade raw materials.

Meanwhile, with the world's rising population and advancing industrialization, more inroads will be made on the raw material supplies of the globe. Competition for the earth's resources will increase dramatically with the demand for primary commodities rising in the free world as a whole by two-thirds to three-quarters its present volume by 1980.

The sea is the avenue by which millions of tons of raw material

imports reach U.S. basic industries. No other type of transport can meet such great demands for vast amounts of petroleum, metal ores and other key materials. In providing access to raw material areas, merchant shipping and U.S. military and economic welfare are more closely correlated than ever before. This strong dependence on the sea as a commerce carrier requires that the United States control sufficient merchant shipping to insure an adequate and dependable flow of imports and exports and to cope with emergency sealift situations. Without U.S.-controlled shipping, this country could be denied tonnage. It could also be denied an influence on shipping rates.

Clearly, then, a need exists for sufficient U.S. merchant shipping to meet economic and military requirements and to preserve America's place in world markets. In the words of George Fielding Eliot, we must use "the gift of our geography which gives us unlimited access to the oceanic spaces of the world."

TECHNOLOGICAL ADVANCES AND MILITARY NEEDS

From the purely military standpoint, there is a requirement for higher speed, quicker loading and unloading capability, and a larger boom capacity in our merchant ships in order for them to be capable of adequately serving the needs of the armed services. In addition, there is a further need for new types of specialized cargo ships.

In a letter of February 28, 1962 to Senator John M. Butler, Vice Admiral John Sylvester, Deputy Chief of Naval Operations for Logistics, described these requirements in some detail. His comments in this regard are summarized as follows:

1. We need dry cargo ships which have a sustained sea speed of 20 knots or better.

2. Cargo ships should be designed and equipped to load and discharge, using their own gear, in one-half the time now required by existing C-3s and C-4s.

3. There is a definite need for a limited number of heavy lift ships equipped with oversized hatches and cargo booms capable of lifting up to 150 tons.

4. There is need for roll-on/roll-off ships, such as the USNS *Comet*, as well as ships with partial roll-on/roll-off capability to meet requirements for overseas movement of mobile military equipment, such as wheeled and tracked vehicles.

5. Additionally, Admiral Sylvester encouraged the continued development of "container cargo" ships to increase our active capability, afford operating experience, and permit U.S. shipyards to gain construction experience to enable them to commence early production under an emergency situation.

6. A tanker building program should continue to provide an orderly

replacement for aging ships. These tankers should be capable of a sustained speed of 20 knots or more, to be most suitable for military purposes should be of about 25,000 to 32,000 dwt., and should have a limited ability to transfer their cargo at sea.

7. Troopships constructed in the future, and passenger ships suitable for conversion into troopships, should be capable of a sustained speed of 25 knots or greater. In no case should their maximum sustained speed be less than 20 knots.

8. Speed is the best defense that merchant ships can employ against an enemy.

9. Endurance adequate for round-trip voyages at maximum sustained speed is a vital factor in wartime.

10. High standards of compartmentation reduce vulnerability to enemy hazards by localizing damage.

11. Finally, a basic factor which must be considered is the necessity for the maintenance of a sufficient number of private shipyards in operation to form a base for expansion in time of war to meet ship construction and repair programs.

The construction of the nuclear ship *Savannah* has been a significant advancement. Nuclear-powered merchant ships would greatly enhance the endurance factor cited above. The cost of ships of this type may preclude the commercial use of any large number for some years but the operating experience of the *Savannah* is needed.

Another recent significant development is the introduction of a bill in Congress by the Department of Commerce for construction of an experimental ship which will incorporate the latest features of automation. Such a ship can lead us to the development of many features needed to reduce our reaction time in emergencies. I am referring not to greater speed but to the equally important ability of loading and unloading quickly. The Department of Commerce is sponsoring this legislation for the purpose of developing a commercially suitable ship and the Navy will strongly support its construction because development of such features should enhance the position of our merchant marine and improve the ability to serve its function as a naval auxiliary.

Advances in technology of ship construction and design, then, can provide greater endurances and speed as well as quicker loading and unloading times, all of which will improve our purely military capability to react rapidly under emergency conditions. At the same time, these advances should enhance the competitive position of the U.S. Merchant Marine and enable it to better serve national defense needs.

U. S. MERCHANT MARINE VS. INCREASED AIRLIFT CAPABILITIES

The explosion of an atomic bomb over Hiroshima marked the

advent of the nuclear era. For some years after World War II, U.S. possession of this weapon was considered the major deterrent to war. With the passing of time, our continental opponent has developed this same capability, and the United States is today in a position that many consider a "nuclear stalemate."

Along with these developments, civil and military air transport capabilities have expanded greatly not only in numbers of aircraft but in capacity. The large jet transport has greatly increased the number of personnel which can be delivered rapidly to distant parts of the world. In the forthcoming decade, the introduction of a supersonic transport with a capability of speeds of Mach 2 or Mach 3 may make an appearance.

Recently the Department of Defense took a number of steps toward improving the ability of the armed forces to meet possible conventional war requirements. We have been developing a rapid response capability to meet so-called "brush fire" and limited war situations in various parts of the world.

What effect will this greatly increased airlift capability have on our purely military need for a merchant marine? Certainly the higher speed, larger capacity air transport is improving the ability to rapidly respond to various military emergency situations, but men must continue to be married to their equipment before they can go into combat and after going into combat they must continue to be supplied basic hand weapons and even larger pieces of equipment that are air transportable but, for the foreseeable future, heavy equipment and armament will still need to be carried by sea.

Although air transport will get troops to the scene of combat earlier in many instances, this does not reduce the military requirement for shipping to carry heavy equipment, or for cargo ships and tankers to supply the troops who have been air transported. Greater use of aircraft will no doubt actually increase the requirement for tankers to supply the fuel required to operate the aircraft. Although new military methods and technology and expanding air transport will give us a much greater rapid response capability for the foreseeable future, we will continue to have a large requirement for a U.S. Merchant Marine to act as a naval auxiliary to meet military requirements.

IS THERE A MILITARY NEED FOR A U.S. MERCHANT MARINE FROM 1962 AND BEYOND?

At the outset, several questions were posed and appropriate answers were sought. First, it was found that the term "military need" might be taken either in the broader context of meaning *national defense needs* or from the narrower viewpoint of *strictly the direct needs of*

the Armed Forces. The question has been discussed from both aspects, at the same time recognizing that the broader usage transcends the responsibilities of the Department of Defense. It has been determined that it is difficult to consider military needs in isolation from *political-economic* or *economic* requirements.

Having established a definition and the interrelationship of military and other needs, we proceeded to determine the major military threats with which we are or may be faced. Analyzing them under headings such as political-economic limited war, large scale conventional war, and, finally, nuclear war it was found that there is a definite need for a U.S. Merchant Marine in each situation. It should be realized that one or more of these projected situations can exist concurrently.

Writing in *The Saturday Evening Post* of March 31, 1962, Mr. Stewart Alsop comments in this connection:

On the military side, Khrushchev's strategy is thus a formula for spreading Communism through Communist-supported limited warfare, under the umbrella of a nuclear stalemate. Such "national liberation wars" are the chief military instrument of Khrushchev's double-barreled grand strategy. The other barrel is economic.

If we accept Mr. Alsop's analysis we find that, while confronted with the possibility of a nuclear holocaust, the free nations of the world are actually engaged in political-economic and limited conflict in each of which there is a requirement for a merchant marine.

Entering the last third of the twentieth century, we find that the United States is still virtually as dependent upon a merchant marine for carrying our export-import trade as we were at the beginning of the century. Today, however, there is one major difference. The United States is no longer a nation self-sufficient in natural resources. To quote a National Academy of Sciences report: "By 1980 the United States may well be one of the poorest nations in the world with respect to high grade raw materials."

To insure the ability always to be able to obtain the necessary raw materials to maintain our economy, we need a merchant marine.

Changing methods and advancements in the military art and technological changes in air transport capability are giving us the ability and opportunity to react much more rapidly in most circumstances of emergency. These advancements, however, in no way have decreased the need for a U.S. Merchant Marine.

In conclusion, I quote again from the testimony of the Chief of Naval Operations: "Our maritime position will remain for us a tool for victory only so long as we exert ourselves to exercise the advantages it offers."

This is something we should not forget.

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WHAT SHOULD BE THE DEFENSE, POLITICAL AND ECONOMIC CONSIDERATIONS IN THE FRAMEWORK OF THE U.S. MERCHANT MARINE POLICY?

Harold I. Baynton

First, let me say that the views expressed here are mine, and only mine. As Chief Counsel of the Senate Committee on Commerce, my field is legal advice, making as certain as possible the legal sufficiency of legislation, that hearings are prepared for, the witnesses are ready—all a lawyer's job. The Committee makes its views known through reports, or statements by the Chairman or the members, not by statements by staff members. So what I give today is my opinion.

Secondly, I must admit that the topic assigned to me, "What Should Be the Defense, Political and Economic Considerations in the Framework of the United States Merchant Marine Policy?" is a challenge, to say the least.

I know people who could talk for days, or would speak for days, given this opportunity, but I will not. I think that it means, Why a United States Merchant Marine? At least, that is what it means to me. I shall try to prove that we need one. This is a broad subject, not one to be batted down in a matter of minutes.

MARITIME POLICY—A GENERAL VIEW

Maritime policy that is referred to in these aspects of my subject rides on a swinging anchor. The emphasis on each tends to shift with the changing tide of national and international events. Emphasis for a strong American flag fleet may change from economic to defense needs. In recent months, for example, Department of Defense officials have stressed the need for adequate numbers of modern American-controlled merchant ships to give logistical support to limited or brushfire wars. They are thought to be more of a realistic present day threat than a general nuclear war.

Emphasis may move from war to peacetime needs and the economic

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good sense of maintaining a regularly scheduled U. S. shipping fleet to carry our increasing volume of exports. Incidentally, it broke all records last year at a value of \$20.1 billion.

Or, the swinging anchor may point our ship of destiny toward a joint political-economic need as regards merchant marine policy. This may exist as the seas run red with ships, Russian ships. There is evidence that if Premier Khrushchev is to "bury us" economically, he will try to arrange it through ships and cargo aimed at certain underprivileged nations which would welcome the hammer and sickle in their ports.

THE FEDERAL SIDE

In touching on the political aspects of merchant marine policy, we must not overlook the problems faced by the shipping industry resulting from the frequent turnover of personnel in Government. This means continual pressure on industry to inform new faces in the Federal agencies and in the Congress on the importance of an active United States-operated merchant fleet. Moreover, cutbacks in maritime appropriations are tempting to Government officials when the pressure is on to balance the budget. A continuing program of information and understanding is therefore needed because poorly timed cutbacks in the maritime subsidy program could hamper the operation of the fleet and the orderly contractual replacement of the war-built fleet.

We cannot, of course, be unmindful of the over-all problems of the Federal budget and of the need for wise decisions on how far to go and how much to spend. But, I am confident that the Government aid necessary to insure survival of the U.S. Merchant Marine on the seas will prove a wise investment in national security and will return rich dividends as well.

TELLING THE MARITIME STORY TO THE PUBLIC

We must remember that many members of Congress are from inland states and that they and those they represent need to be reminded of the important contributions that world trade and ocean shipping make to their respective states. To help solve this problem, the leading executives of many steamship companies travel thousands of miles each year to hold two- or three-day maritime trade programs in Pittsburgh, Cincinnati, Kansas City, St. Louis, Minneapolis-St. Paul, and Denver. These inland visits, frequently tied in with World Trade Week observances in May, have a twofold purpose:

1. To point out what ocean commerce and American flag shipping mean to an area's economic growth in local dollar value to industry; number of workers affected by trade and its importance in wages and earnings; how citizens, from the manufacturer to the housewife and

the man in the street, are dependent daily on ship-carried imports and exports.

2. To help shippers step up their sales abroad through utilization of American flag companies and their trade expansion staffs. This, of course, ties in closely with President Kennedy's Export Expansion Program to send more U. S. goods overseas to reduce the balance of payments deficit.

THE WHITE HOUSE VIEW

President Kennedy recently said: "American flag shipping is essential to the defense of this and other nations of the free world, and to the growth and freedom of every continent . . ." To maintain this need, the maritime industry must receive some financial aid from the Government as set forth in the *Merchant Marine Act of 1936*, the charter for our modern shipping programs. The maritime industry is beset with high labor and ship operating costs, as are many other U. S. industries.

What really is our merchant marine policy? In my view, the best definition can be found in Title I of the *Merchant Marine Act, 1936*. Section 101 stipulated that for reasons of national security and on behalf of U. S. foreign and domestic commerce, it was necessary for this country to have an adequate fleet under American flag and owned by U. S. citizens. Such a program, it was emphasized, was to be encouraged.

This is an excellent policy with clearly defined objectives. Unfortunately, I believe that we have failed in every one of these goals.

1. Our fleet is not adequate to carry domestic waterborne and foreign commerce on all essential routes if it were permitted its proportionate share of such commerce.

2. Obsolescence and low rate of replacement are leaving us rapidly with a merchant fleet not capable of serving as an adequate military auxiliary in time of war. At present, in time of "peace," our merchant fleet is sometimes not able to provide sufficient sailings to carry military cargo from our own ports and, in time of war, it is, unfortunately, an historical fact that we cannot rely on foreign flags to provide necessary bottoms to meet our requirements.

3. Although the ships constructed in the United States are unquestionably among the best equipped and safest on the high seas, a trend is developing to build ships, in part or whole, in foreign countries, while our own shipyards are idle. This does not, of course, aid our economy.

Indeed, we have strayed a long way from the original intent of the policy stated in the *1936 Merchant Marine Act*, and the objectives have been distorted, if not lost completely.

A look at the status of our merchant fleet at the start of 1962

shows that it suffers from obsolescence, lack of cargoes, and foreign competitors even along the Seaway and Great Lakes:

1. Obsolescence. Within three years, 8 out of 10 dry cargo vessels now in the private fleet will have reached twenty years of age or over. Two-thirds of the vessels now in the tanker fleet should be replaced within three years.

2. An inadequate domestic trade fleet. This fleet consists of only 105 dry cargo ships as compared with 468 ships in 1939. Ships employed in the coastwise and intercoastal trade (57 vessels) are most readily available for use in an emergency. They are always close to United States ports ready for immediate use as compared to ships in the foreign trade.

3. Insufficient cargoes for our own ships. This has resulted in a fleet of only 938 active vessels at the outset of 1962. Last year all we carried was 11 per cent of our oceanborne commerce. Trends in this area leave much to be desired.

4. Lack of a well-balanced fleet. We need a modern fleet of bulk carriers to assure a supply of vitally needed raw materials in time of war. There is a glaring deficiency as to special type cargo ships such as roll-on/roll-off and container ships.

5. Great Lakes-Seaway Foreign Trade. Here, on a waterway penetrating into the very heart of our country, we find that foreign ships provide 30 times more sailings per month, to Europe and the Mediterranean, than our own American flag vessels.

Since the policy is excellent, the failure must lie in implementation. The U.S. Merchant Marine competes in the world shipping market as the high cost operator under substantial economic disadvantages. To support our national maritime policy we must provide our shipping industry with adequate financial assistance. Let us examine the six types of assistance presently provided to our merchant marine by the Government:

1. Construction-differential subsidy and trade-in allowances on old ships when new ones are built. This subsidy is intended to offset the higher cost of ship construction in American yards than in foreign shipyards. This program is available to berth operators in foreign commerce.

Parts of the program are also available to operators in domestic commerce and to tramp and tanker operators. The cost of replacing some 276 subsidized vessels in liner service by 1970 is estimated at almost \$3½ billion. Very few non-subsidized vessels have been constructed under the construction-differential subsidy provisions of the *1936 Act* and there is no program to replace this segment of our merchant fleet.

2. Operating-differential subsidy. This subsidy is available only to liner vessels serving an essential trade route. Tramp vessels, ships

in the domestic trade and all tankers are not eligible for this type of Government aid. As of December 31, 1961, there were 15 companies operating 276 subsidized ships, excluding chartered vessels. The total number of active privately owned dry cargo and combination vessels in our foreign and domestic trade was 607. Thus, 45 per cent of all privately owned dry cargo vessels is subsidized. Most of the subsidy goes to offset high labor costs.

3. Title XI of the *1936 Act* provides mortgage aid to ensure funds from private sources to finance new construction in American yards. The Government guarantees mortgage bonds covering up to 87½ per cent of the ship's cost to the operator. The costs to the Government are small as long as there are no defaults. In addition, special tax relief is afforded to those funds set aside for replacement purposes.

4. Cargo preference. Subsidies do not guarantee cargoes and the disparity of our shipping in world trade is amplified when the 11 per cent our ships carried is compared to most maritime nations carrying at least 50 per cent of their foreign trade in their own ships. *The Cargo Preference Act* was passed in 1954. This requires that U. S. ships carry at least 50 per cent of all cargoes financed by government aid programs, if such ships are available at reasonable rates. This law, however, applies only to cargoes financed by the taxpayer, not to commercial trade. It keeps about 80 tramp vessels in active service inasmuch as market rates on bulk cargoes are too low to allow U. S. flag participation. It also provides liner vessels with needed cargoes with bulk commodities serving as filler cargo. The plight of the tramp fleet can be illustrated by the movement of coal last year when we exported 22,000,000 long tons. Virtually, all of this cargo moved by foreign flag vessels. The one major exception was the use of American flag ships in the movement of coal to Germany for the military. These 50/50 cargoes are significant to liner vessels, accounting for as much as 25 per cent of total cargo revenue and about 100 per cent of cargo revenue for tramp vessels.

5. Cabotage. Foreign flag vessels are excluded from our domestic trade. Only ships built in the United States, registered under the American flag, and owned and operated by American citizens are eligible. Airline, rail and motor competition, however, have taken a heavy toll of our domestic fleet. Combination vessels have been forced out of the coastwise and intercoastal trade. Selective rate reductions on an out-of-pocket cost basis by the railroads on water competitive cargoes have forced almost all of the liner services out of the domestic trade.

6. *The Merchant Ship Sales Act*, passed in 1946, allowed the Government to sell war-built vessels. American flag shipping companies were able to replace war-lost tonnage or obsolete vessels at prices ranging from \$639,000 for a *Liberty* up to \$1,650,000 for a *C-4* and

\$2,026,500 for a T2 tanker. Thus, at the end of World War II we had a modern fleet for peacetime service. But in the fifteen years since 1947 the fleet has shrunk by more than 50 per cent.

WHAT A SUBSIDY MEANS

The subsidy payment to qualified steamship lines in ocean commerce is, in effect, a subsidy to the American standard of living. Such payments are made solely to put the U. S. operator on a parity with his foreign flag competitor in the wages, subsistence, maintenance repairs and insurance. The foreign operator can build ships for about one-half and operate them at about a quarter of the costs we have to pay.

Interestingly enough, at a time when there is much Administration emphasis on employment, it is significant that 84 per cent of subsidy payments go to American seamen.

The operating differential payments to the lines, then, help make up most of the difference between high American and low foreign ship operating costs.

The shipping lines receiving the payments agree to maintain regular, dependable sailings over 31 essential trade routes while making some 2,000 voyages a year. They also contract to replace their fleets with new ships every twenty-five years; to build these ships with American materials in American yards; to hire only American officers and crews; to purchase supplies and equipment and to make repairs in the United States.

The program of operating differential payments to the maritime industry is unique among the programs of the Government. Not only does the Government insist upon a number of undertakings by the companies, as I outlined above, but it limits this subsidy to an amount sufficient to put the high-cost American operator on a relative parity with his foreign competitor. From a political point of view, this is very important because it makes the entire program far more acceptable both to the Congress and the public at large.

The operating subsidy or, as it might be called, operating parity payments, simply enables the American companies to compete at the same freight rates as charged by their low cost foreign competitors. Operating payments, the rates of which are determined by the Government, can have only four items of cost: wages, subsistence, maintenance and repair, and insurance. During recent years, these payments have been underwritten for approximately 22 per cent of the total cost of operating lines vessels.

Another unique aspect of the maritime subsidy program is the fact that the subsidies do not guarantee a profit. In fact, they must be returned to the Government through recapture if profits exceed a certain amount. During the 1950's, many operators paid to the Gov-

ernment through recapture a large portion of the operating subsidy that they had received. At the present time and for the foreseeable future, there will not be much recapture. Freight rates are low due to excess tonnage in the world merchant fleets, and this naturally drives down profits. At the same time, American labor costs are continuing to rise faster than foreign wages.

FOREIGN WAGE SCALES

Since you are interested in foreign trade, many of you have probably read recent press reports that wages in Western Europe and Japan are rising faster percentagewise than in the United States. This is true, but somewhat misleading, because American wages are still rising at a faster absolute rate.

Let me illustrate. The wages of German shipyard workers increased from about 55 cents an hour to almost 70 cents an hour in the three-year period from 1958 through 1960. This is an increase of approximately 21 per cent. During the same period, American shipyard wages increased from about \$2.40 an hour to about \$2.80 an hour, or an increase of 15 per cent. However, because of the higher American starting point, the actual dollar increase in the United States was 40 cents as compared to 15 cents in Germany. Both Government and industry have been concerned about this cost price squeeze and have begun a research and development program to increase mechanization and efficiency of U.S. vessels and to reduce maintenance and overhead costs. This is a long-term program which I believe firmly should be continued as a matter of Government policy.

The Government also provides construction differential payments to shipyards to aid in the building of ships in the United States. Its purpose is to maintain a modern shipbuilding capability for wartime use.

SUBSIDIES ARE WORTH THE COSTS

What has operating subsidy cost the Government since passage of the 1936 Act? It is a little over \$1.2 billion, after repayment. This is a small price to pay for a quarter of a century operation of an active American flag fleet. The Navy's new aircraft carrier *Enterprise* cost almost half that amount!

The importance of the American Merchant Marine as a defense arm, surprisingly, has increased in this nuclear and rocket age. The Joint Chiefs of Staff have said as much.

The New York Times Sunday Magazine recently had a lengthy analysis of the *Polaris* weapon system. It concluded that, because of the vastness of the seas and the number of vessels involved, this weapon system was probably the most potent in our arsenal. The

ability to move and disburse over wide areas applies equally to the military and economic value of merchant ships.

As a U.S. military planner pointed out, "There are no bridges to build, no mountains to cross, no tunnels to dig, and the ship can alter its course at will."

Therefore, from the U. S. point of view, in brushfire or nuclear war, an American merchant fleet *in being* is necessary. I say *in being* because never again will we have four years to prepare. In World War II, it cost \$17 billion and took four years to build the shipping life lines to victory.

History has taught the United States a lesson. It cannot depend on foreign merchant fleets in time of crisis or world war. Admiral Emery S. Land, former Chairman of the U. S. Maritime Commission and War Shipping Administration, said after World War II that, because of the lack of American merchant ships, the war was prolonged a year or longer and many American lives that could have been saved were lost.

In World War I, because of unavailability of American ships and a monopoly by foreign ships, general cargo rates increased by 1,100 per cent. By contrast, in Korea, when American flag vessels were available, conference shipping rates increased a modest 10 per cent.

Speaking of reliance on our own shipping, American flag ships carried 80 per cent of the troops and supplies in the Korean conflict. To accomplish this, over 600 vessels had to be broken out of the Government reserve fleet. Even during the Lebanon crisis, American merchant ships were diverted from regular scheduled sailings to help provide logistical support for U.S. military forces. Let me speculate on what our merchant marine should have available for defense needs.

FUTURE REQUIREMENTS FOR THE U. S. MERCHANT MARINE

To cope with any future war, I believe that the United States should have, in operating condition and readily available for the armed forces:

1. Dry cargo vessels, preferably of 20 knots (or at least 18 knots) sufficient to meet initial mobilization needs as determined by the Joint Navy-Marad Committee. Included must be vessels fully and partly containerized, some roll-on types, some heavy-lift types. The latter two classes of vessels, because of their uneconomic utility, probably would have to be built by the Government and made part of the Military Sea Transport Service.

2. Passenger vessels, 25-knot speed or more, capable of rapid conversion to troop carriers, with surplus water distillation and other features to meet the demand of troop transport. Despite their low economic potential, consideration should be given to the already

authorized replacement for the *S. S. America*, and the super liner for the Pacific, both of which would be invaluable in a future war.

3. Tankers, of 18 knots or better, to serve the global requirements of the Navy and Air Force.

Where in previous wars there was a wealth of shipping, coastal and intercoastal, with the attendant tugs, lighters, etc., the greatly depleted numbers in these trades will limit sharply their availability. An application of the American-Hawaiian Steamship Company is before the Secretary of Commerce for mortgage insurance on three fast, modern, fully containerized vessels for the intercoastal trade. Also, the 86th Congress provided construction subsidy aid for the building of new fishing vessels, under restricted conditions. Only one award has been made under this statute. The valuable services rendered by fishing vessels and crews in shore patrol work and offshore scouting during World War II suggest that possibly it might be advisable to make this statute less restrictive. Certainly, such vessels would be most valuable again in a future war.

Bulk dry cargo carriers, while not in the logistical class strictly, will be an indispensable part of the U. S. war potential in any emergency. With so much of the ores for the steel and aluminum industries now imported, the need for large, modern dry bulk carriers will be urgent. Many of these vessels are registered under the Panamanian, Honduran and Liberian flags, and are committed to service of our needs in case of war. To the extent that they can live up to these commitments they will be most helpful. Our dependence in this field on ships not manned by citizens of this country conceivably could leave us in a bind to some degree, no matter how patriotic the owners might be. As a measure of insurance, it would seem urgent that a certain number of such vessels should be under U. S. registry and operation.

Politically, tankers and bulk carriers under the flags of "convenience or necessity" have another facet that must be considered. Presently the three governments involved are committed to permit return of these vessels to U. S. registry. What the political temper of the countries may be at some future date, no one can foresee. In what condition is our "Fourth Arm of Defense" today?

THE PRESENT SITUATION—SUBSIDIZED AND UNSUBSIDIZED LINERS

On the plus side, the 15 lines holding operating contracts are replacing 300 ships at a cost of about \$4 billion with Government and industry splitting the cost. These ships are the last word in marine design, in fast and efficient cargo handling, in safety and navigational aids. New technological advances are being incorporated as soon as they become tested and commercially feasible.

Already 4 passenger ships are in service, 26 cargo ships have been

delivered and another 54 vessels are building. Contracts for 6 more ships will be signed before the end of fiscal 1962, and it is hoped that 18 vessels will be constructed in fiscal 1963. If these contracts are signed, provisions will have been made for the construction of 108 vessels, representing more than one-third of the total fleet to be built under the current replacement program.

But this new and modern fleet, sizeable as it is, represents only about one-third of our entire active merchant marine. What are the prospects of the other two-thirds?

They are not good. Admiral John Sylvester, Deputy Chief of Naval Operations for Logistics, in his report on the defense readiness of our shipping, noted that the unsubsidized element of the U. S. Merchant Marine is made up of 690 ships of World War II vintage. At present, there are no plans to replace them in an orderly way, a condition, he warns, that has a strong bearing on the strategic capabilities of the merchant marine.

U. S. WARTIME REQUIREMENTS

This slow rate of replacement, Admiral Sylvester said, leaves us largely with an over-age merchant marine whose wartime potential would at best be marginal. In this connection, he went on, the United States must have enough tonnage under its own control to respond to emergency needs. Although NATO vessels would be helpful, they do not completely fulfill the conditions U.S. ships would be expected to fulfill, because "... the interests of the United States are global, and emergencies will arise wherein our interests would not be identical with those of our European allies." In this connection, let us look at the Reserve Fleet.

IMPRESSIVE IN QUANTITY—NOT IN QUALITY

The numbers are impressive, but the facts are not. We have some 1,253 dry cargo ships in reserve; about 78 tankers; and approximately 90 troop transports.

Of the 1,253 dry cargo vessels, 900 of them are slow speed Liberties. Their wartime usefulness is limited. Nearly 450 Liberties have been sold for scrapping already. They were not worth the cost of preservation under modern concepts of warfare.

The only other ships available to us for defense would be those under the Military Sea Transportation Service and, presumably, those known as "Flags of Necessity" registered under the flags of Panama, Liberia and Honduras, but considered to be under effective control of the United States in a national emergency.

Old ships, scrapping, obsolescence and the need for additional replacement programs hardly add up to the Office of Naval Operation's statement that "an extremely important mission of the American

Merchant Marine is the maintenance of a posture of strength and readiness that will contribute to our national security."

SUMMARY

It is sound economic policy, as well as prudent, hardheaded business, to have an active merchant fleet in peacetime. American cargo liners engaged only in U. S. trade are, by their very nature, essential partners of the American businessman. These ships are, in fact, the dependable life line that links every U. S. factory door to the home ports of global customers and suppliers.

President Kennedy recognized this when he told Congress in his Transportation Message on April 4, 1962, that he is taking direct action to see that more U. S. cargoes move in American flag vessels.

In his message, the President said: "I have directed the Secretary of Commerce to implement fully Section 212(d) of the *Merchant Marine Act of 1936*, for securing preference to vessels of United States registry in the movement of commodities in our waterborne foreign commerce; and I have directed all executive branch agencies to comply with the purpose of our cargo preference laws."

The Chief Executive also "authorized and directed" the Secretary of Commerce to work closely with private as well as Government organizations to urge American importers and exporters to utilize U. S. flag merchant vessels.

President Kennedy's Transportation Message pronouncement on the American Merchant Marine is tantamount to a partnership between Government and the private shipping industry that will strengthen and revitalize the U. S. fleet through an increase in volume of cargoes transported on American carriers.

Today, American ships carry less than 30 per cent of U. S. world trade in liner services; our merchant marine as a whole, just over 10 per cent. The industry is after its "fair share" of American trade . . . 50 per cent.

Some shippers may not realize this, but a "double export" situation develops when U. S. ships move their cargoes. Yes, every export that "goes American" contributes twice to a more favorable balance of payments, as an export and insurance that dollars spent on shipping services are kept from going abroad.

Two American University economists completed a study that shows American flag vessels contributed between \$700 million and \$1 billion American flag shipping as an industry is a favorable factor in the U. S. balance of payments. American shipping, as an industry, also a year towards our favorable balance of payments. This means that contributes significantly to a healthy domestic economy.

Another study points out that shipping employs 60,000 American seafarers; spends \$49,000,000 annually on fuel, \$40,000,00 on sub-

sistence and stores purchased largely from American farms and industries, \$40,000,000 for insurance and \$32,000,000 for repairs; helps provide jobs now for between 15,000 and 19,000 shipyard workers and will, in the foreseeable future, provide shipbuilding employment for between 50,000 and 70,000 Americans; pays Federal taxes amounting to between \$40,000,000 and \$50,000,000 annually.

It is worth noting that, since 1945, 80-85 per cent of net operating subsidy costs paid by the Government have been offset by Federal income taxes paid by American shipping companies and their employees.

There is an old Japanese proverb which says: "He who can see three days ahead will be rich for three thousand years." We cannot afford to be shortsighted or to short-change any necessary element of our economy or defense. The U. S. Merchant Marine must stand in the forefront in this regard.

Not since the days of World War II has shipping been so much in the news or so important to American Government and business. The Common Market, export expansion, limited or general war, an economic offensive to meet the Russian trade threat, all of these tie in with U. S. policy to maintain a ready and reliable American merchant fleet to help preserve the freedom of the United States and our foreign friends outside the Iron Curtain.

SHOULD SUBSIDY BE EXTENDED TO TRAMP AND DOMESTIC TRADES? (I)

Marvin J. Coles

Today I have been asked to speak on the question: "Should Subsidy Be Extended to Tramp and Domestic Trades"? In my opinion, the answer is, clearly, yes. Perhaps I should stop there. On the other hand, I believe that you are entitled to the reasons for this opinion.

In formulating my view, I have given thought to (a) the nation's needs for vessels; (b) the economic problems requiring a subsidy; (c) the types of cargoes which the nation will require; (d) the types of ships required to carry these cargoes; and (e) the special problems of the coastwise lines and tankers.

First, we must ask why the Government pays subsidies to steamship companies? Why should public funds be paid to private enterprises to enable them to operate? The answer is, simply, that this is the only way by which an American Merchant Marine can operate. But the basic reason is that the Government requires an available merchant fleet to meet its needs in the event of an emergency and to meet its peacetime commercial needs. Subsidy is money that the Government pays in order to support the national interest.

WHY SUBSIDIES ARE NECESSARY

To understand the reason for shipping subsidies, one must realize that it costs over twice as much to build a vessel in the United States as to construct the same ship in a foreign shipyard. It costs over twice as much to maintain and operate an American vessel as it does for the foreign flag equivalent. Under these circumstances, it is obvious that American ships cannot compete. It is equally evident that in the absence of a subsidy, capital would be attracted to foreign flag shipping ventures rather than American. While it may be argued that foreign flag ships are available to the United States, it has long been recognized that only U. S. control of vessels can meet official needs. In order to have these vessels subject to U.S. authority and availability, a way had to be found for capital to be attracted

to American vessels. The method by which this has been done over the past twenty-five years has been to grant both construction and operating-differential subsidies to American shipowners, thus putting U.S. ships on a cost parity with foreign competitors. In other words, it has been Government policy to pay out of Government funds the differences between American and foreign costs in order to encourage operators to put their ships under American flag.

WHO GETS THE SUBSIDY?

It should be noted that the subsidy really does not go to the shipowner. The construction subsidy, for example, is paid directly to the American shipyard for the higher cost of building the ship in the United States with American labor and materials. The operating subsidy payments are made to the shipowner, but he is really only a conduit for the payment of the subsidy funds to seafaring labor, the repair yards, and the other American institutions that receive payments based on the American rather than the foreign scale of cost. Neither construction nor operating subsidy guarantees the shipowner a profit. Together, they are designed merely to put him on a cost parity with foreign competition. When one recognizes that the shipping market is world-wide and that foreigners are free to compete, it will be seen that the subsidy is a means by which American flag shipowners are permitted to compete equitably and fairly. In the absence of such subsidies, the Government, for economic reasons, could not obtain the vessels it needs.

NATIONAL EMERGENCIES CALL FOR U. S. SHIPS

The Government spends large sums on the Air Force, the Army, and the Navy. While it is hoped they will not be required for an emergency, they must be available. And this involves large expenditures. In the same way, a merchant marine must be in readiness. American flag ships, subject to the full jurisdiction of the U.S. Government, are required as naval auxiliaries. In recent years, in which the United States has been dependent upon imports of raw materials, American ships have been necessary to insure the continuance of these commodities in wartime.

In accordance with U.S. security policies, American ships are also needed to make certain that the allies of the United States can be fed and supplied in order to sustain their war potential. Few would argue that we should rely upon foreign air forces, navies, or armies for our defense merely because they are cheaper. The nation is aware of the need for American-controlled forces and is willing to pay for them. Similarly, the United States must have an American merchant marine. The Government, through its subsidy program, accepts this.

U. S. SHIPS NEEDED IN PEACETIME

In addition to wartime exigencies, it should be understood that American vessels are also important in peacetime. The United States has a large export and import foreign commerce that is essential to its economic well being. While it is argued sometimes that foreign ships can be used, U. S. policy maintains that American vessels are essential for this purpose. American tonnage is required to insure that there will be adequate service to and from American ports. Moreover, ships subject to American regulations are necessary to make certain that reasonable freight rates will be maintained, for American ships assure that rates for American exports will, if possible, not be more than what is charged for shipments of similar foreign products to prevent the underselling of American goods in world markets. Only American bottoms can assure adequate service for U.S. foreign commerce. Thus, service to American industry is another reason why the United States must subsidize its merchant marine.

CONSTRUCTION AND OPERATING SUBSIDIES MOST SUITABLE

Methods of maintaining and developing an American merchant fleet besides the use of direct subsidies have been tried and abandoned. In the past, mail contracts were used, but did not work. Subsidies had to replace them. Cargo preference acts, Government mortgage aid, and even availability of construction grants without operating subsidies were applied. None of these methods, however, has been enough to attain the kind of fleet which the United States needs. Experience shows clearly that only through construction and operating subsidies can the United States get the vessels it requires.

FURTHER SUBSIDY COVERAGE NECESSARY

As stated at the outset, the question today is whether or not the subsidy, which has proved so effective over the past twenty-five years in maintaining an American liner fleet, should be extended to cover American tramps and coastwise vessels. May I add that subsidies for U.S. flag tankers also might be considered? There are good reasons why they should. First, recent experience demonstrates that without operating subsidies, the American tramp, tanker, and coastal fleets have declined steadily. At the same time, the U.S. subsidized liner fleet has expanded and developed quite well. But not only has the economic record shown the need for subsidies. Changes in the national security and commercial position of the United States in the past twelve years indicate the necessity for extending the subsidy to cover tramps and tankers as well as vessels in liner trades. These shifts in basic cargo movements point out that in order to have a U.S. Merchant

Marine, which I suggest is so important, subsidy laws must be revised to permit subsidization of vessels vital to the national welfare in addition to the present support of liners.

EXPANSION IN TRAMP TONNAGE

When the *Merchant Marine Act of 1936* was enacted, a report was made to the Congress that there was no American tramp fleet and apparently no need for one. At that time, approximately two-thirds of the total export and import tonnage of the United States was carried in liner ships and about one-third in tramps. In 1936, the then Maritime Commission said that the trend was away from tramps and toward liners. Under these circumstances and bearing in mind that there was not a single American flag tramp and that our domestic trades were healthy, there was seemingly no requirement for a subsidy to non-liner ships. Unfortunately, these predictions turned out 180 degrees wrong. Instead of greater utilization of liners, the proportion of U.S. export and import tonnage carried on tramp vessels expanded tremendously. By contrast, U.S. domestic trades have declined precipitously.

Today, approximately 70 per cent of all export and import dry cargo tonnage of the United States is carried in tramps. In addition, liners carry as parcel lots additional volumes of bulk cargoes which would be described normally as transportable by tramps. In the absence of an operating subsidy, American flag tramps cannot compete in the carriage of these cargoes. The result is that the American flag tramp fleet has declined and its tonnage consists of war-built vessels principally. Unless the United States is reconciled to giving foreign flag ships this great part of its total export and import commerce, operating subsidies must be extended to American flag tramp vessels now.

INCREASING DEPENDENCE ON RAW MATERIAL IMPORTS

In contemplating a policy of Government aid, official requirements should be estimated first. In doing so, it should be recognized that the need is not for ships, but for vessels to transport the cargoes that are in demand. Vessels are not ends in themselves, but merely means to an end, i.e., the movement of cargoes essential in the Government interest. Not only must the size and composition of the fleet be examined. The nature of the cargoes on which the Government depends for its programs should be surveyed.

What cargoes does the Government have to move in war and peace? When the *1936 Act* was passed, the United States was quite self-sufficient in iron ore for American steel production. Today, about one-third of all the steel manufactured in this country is produced with foreign-supplied ore. Almost all of the bauxite used to fabricate

the aluminum employed in the missile and aircraft industries is imported. Before World War II, the United States was an exporter of oil. Today, it imports over 7.5 million tons per month. In the event of war, iron ore, bauxite, and oil are essential to maintain both civilian living standards and a war-making potential. What about exports?

The principal U.S. export cargoes today are coking coals and grain. The coking coals are sent to our allies to help their steel making capacity. The grains feed their people. In wartime these shipments must be continued.

SHORTAGE OF TONNAGE TO MEET U.S. PEACETIME NEEDS

Not a single U.S. flag bulk cargo ship has been built since 1945. The existing bulk cargo fleet consists largely of Liberty vessels, a few Victories, some C-4's, and several tankers converted into bulk carriers. Compare this with the huge fleet of modern vessels ranging from 10,000–50,000 tons deadweight which foreign shipowners have built in order to trade with the United States. Notwithstanding the Cargo Preference Laws, the mortgage guarantees of Title XI of the *Act of 1936*, and the theoretical availability of construction-subsidy aid, the economic situation and the absence of an operating subsidy do not allow American owners to build bulk carriers for American registry.

The only way to encourage this is by granting operating subsidies. It should be obvious that the cost differential is the same as for liners. Therefore, the need for cost parity through operating subsidies is equivalent for tramps as for liners. In the same way that the operating subsidy has helped to create a large fleet of American liners, it is only by the same mechanism that the construction of bulk carriers can be achieved.

COASTWISE SHIPS REQUIRE SUBSIDY AID

So far I have touched but lightly on the needs of domestic carriers. At the time that the *Act of 1936* was passed, the coastwise trades were strong and virile. In twenty-five years, however, they have declined so much that today only two major companies continue in this trade. Because of the laws which limit carriage in domestic trades to American flag ships, the concept of the operating subsidy has never been available to these vessels. The demise of the domestic shipping trades has resulted not from foreign competition; rather, it has been caused by the rate making system under which railroads have been able to cut rates to a point below which the water carriers can compete, their basic cost advantages notwithstanding. To extend subsidies to domestic carriers would be a new step. But is there any other way to solve this problem and to redevelop a coastwise fleet? What

alternative is there but to extend the subsidy program which has helped the liner services so well?

Earlier, I said that there is an urgency for ships. National emergency does not distinguish whether a vessel has been previously in the foreign or the domestic trades. Moreover, the nature of the domestic trades emphasizes the physical availability of these vessels, whereas vessels in foreign commerce may be subject to hostile seizure when they are wanted. During World War II, the ships taken from the coastwise fleet proved of great importance. While I would agree that extension of a subsidy to coastwise operations is contrary to former policy, assistance will be necessary to rebuild this part of the U.S. Merchant Marine unless a change takes place in the rate making policies of the Interstate Commerce Commission. This would acknowledge the advantages of the water carrier and preclude competitive practices designed to drive coastal carriers out of business.

SUBSIDIES FOR U.S. TANKERS IN OFFSHORE TRADING

Let me extend my subject to discuss whether or not subsidies should be granted to tankers. In this connection, a significant change in the oil industry has taken place since 1945. Before that time, the United States was the outstanding producer as well as the major consumer of oil. Self-sufficient in oil, the United States was also an important exporter. But since the 1950's, imported oil has played an increasing part in the U.S. economy, so that presently over 1.5 million barrels are imported per day. Except for imports from Canada and Mexico, tankers move this oil. Again, because of lower building and operating costs, foreign flag tankers carry most of this oil. Less than 5 per cent of the total imports of the United States is shipped under American flag. And, this is only because a cargo is military or because an American vessel is in position for a return cargo. Basically, the American tanker fleet is relegated to coastwise trades between the Gulf of Mexico and the ports north of Hatteras. Recently, plans have been announced for the construction of a pipeline from the oil producing areas of the southwest to the environs of New York City. Thus the need for tankers has dropped by about 25 per cent.

War would naturally implement the domestic demand for oil. In addition, tanker vessels would have to supply the armed forces abroad. With an American tanker fleet presently too small to support even peacetime requirements, the United States would obviously be deficient in wartime tanker capacity. Approximately two-thirds of the total American tanker fleet is now sixteen years old or older. Since tankers have an average life of twenty years, it will be seen that soon the tanker fleet will be well below peacetime and wartime requirements. The increase in imports means that each foreign barrel of oil replaces a barrel which otherwise would have been carried on an American

tanker. The only way a tanker fleet under American registry can be maintained is either to stipulate that a portion of imported oil must be carried in American flag tankers or to grant operating subsidies to American tankers for as long as they are engaged in foreign trades.

Nevertheless, I do not advocate subsidies to coastwise tankers. I repeat, however, that unless there is some arrangement for U.S. flag ships to carry a percentage of imported oil, the only means of assuring adequacy of tanker tonnage is by giving operating aid.

CONCLUSIONS

For many years, we have witnessed the decline of the American tramp, tanker, and coastwise fleets. Hearings have been held, studies have been made, and hopes have been announced for various programs. Despite the effort put in resolving this problem, the results have been negative. In all these years, the decline of these segments of the merchant marine has been evident to all. The only practical method I know to reverse this trend and to rebuild this tonnage is to grant operating-differential subsidies.

I do not merely support an across-the-board grant of subsidy for all American ships. It must be understood that budgetary considerations prescribe limits for the number of ships that can be subsidized. But within fiscal bounds, I think authority must be given to extend present subsidies to all U.S. vessels. The question of how the subsidy should be allocated subsequently would be up to appropriate military and civilian departments.

As a starting point, I suggest a revision of existing subsidy laws to determine what cargoes are essential to the national interest. Once that decision is made, the determination of the type and number of ships essential to move these cargoes can be made. In this connection, we note that there is only a limited interchangeability of ship types from the standpoint of efficient operation. While it is true that a tramp ship can carry general cargo, it cannot do so efficiently; similarly, while a liner ship can carry bulk cargoes, it cannot do so effectively. A tanker can move grain, but it is not suitable as a general bulk or liner type ship. Conversely, tramps and liners cannot carry volume liquid cargoes efficiently. After the class of vessel and the number to be employed in the national interests are resolved, only then can the share of the available funds be allocated. If subsidies are not extended to tramp, tanker, and domestic vessels, I foresee the continued decline of these components of the American Merchant Marine. In view of national cargo requirements for both war and peace, I think this would be most unwise. Accordingly, I believe that the subsidy should be extended to cover these segments of the U.S. shipping industry.

SHOULD SUBSIDY BE EXTENDED TO TRAMP AND DOMESTIC TRADES? (II)

Dr. Roland L. Kramer

When my old friend and colleague, Professor Fair, invited me to discuss this subject, I felt instinctively that this would be easy. To subsidize tramps and vessels in domestic trades made no sense because of the distinctive nature of these services and also because of the almost complete lack of any precedence in the maritime history of the United States.

However, the subject became more complicated as I pondered over it. I said to myself, "What do we mean by subsidy?" I had thought of construction and operating subsidies. I knew that construction subsidies, in theory, were available to tramps engaged in the foreign trades and that construction subsidies were not available to vessels in domestic trades. Secondly, I knew that operating subsidies were not available to either of these trades since, under the law, they are paid only to vessels of a steamship line operating on an essential foreign trade route.

Then it occurred to me that these subsidies are commonly called direct subsidies. What about indirect subsidies? A number of these have been used in the United States. The oldest of all forms of aid to the merchant marine is the cabotage principle under which domestic carriage by water is reserved for the national fleet. In the United States, this dates from 1817 and has continued to the present time with several minor exceptions associated with the two world wars. These exceptions permitted foreign-built vessels to be operated in the domestic trades by American operators.

Another form of indirect subsidy is preferential railroad rates. In the United States there are preferential railroad rates applicable to export and import traffic but they do not apply only to American flag vessels. Other indirect forms of subsidy are loans, particularly at low interest rates. Such loans would be available in connection with the construction of any vessel engaged in the foreign trade of the United States, including tramps. But who has ever been known to build a

Dr. Roland L. Kramer, Professor of Commerce and Transportation, Wharton School of Finance and Commerce, University of Pennsylvania.

tramp in the United States? Tax concessions are another form of indirect subsidy and these also are available in connection with operating differential subsidies which have never been given to tramps or vessels in domestic trades of the United States. Finally, cargo preference in the foreign trade may be used as an indirect form of subsidy or aid. This is practiced in the United States under the so-called 50-50 law under which 50 per cent of the foreign aid cargoes are required to be carried in American vessels.

In summary, therefore, maritime subsidy, as far as the tramps and domestic trades are concerned, comprises construction subsidies for tramps (which is apparently conceivable); cargo preference in connection with United States foreign aid programs; and cargo preference of 100 per cent to United States flag carriers in domestic trades.

The question expressed in the title of this paper is: "Should subsidy be *extended* to tramps and domestic trades?" My answer is that subsidy and indirect aid are now available to these segments of the United States Merchant Marine. Evidently, the question is: "How much further should subsidy be granted to these trades?" Before answering this question, let us look briefly at the nature of the tramp and domestic trades.

THE NATURE OF THE TRAMP INDUSTRY

Were it not for the American Tramp Shipowners' Association, I would not have known that tramps are included in the United States Merchant Marine. But here they are.

By definition, a tramp carries a full or nearly full cargo of a single commodity, generally from one place of loading to one place of discharge. In the case of tramps, the shipper charts the whole ship or the carrying capacity of the ship. The owner of a tramp may accept or reject any cargo or any trade that he chooses. The compensation he receives is determined by the world market for tramp ships. Indeed, the levels and fluctuations in the monthly rates for time charters of ships of different classes have been accepted as evidence of the existence of free and open market competition. Costs of ships and of operation have little, if anything, to do with charter rates; it is purely a matter of competition at the world level.

THE NATURE OF DOMESTIC TRADES

The other branch of the United States Merchant Marine to which the question of extending subsidy applies is the domestic trades. These include (1) coastwise; (2) intercoastal; (3) noncontiguous; (4) Great Lakes; and (5) inland waterways.

The coastwise and intercoastal trades have waxed and waned and at the present time are virtually nonexistent, so far as common carriers are concerned. The noncontiguous trades, running to Puerto

Rico, Hawaii and Alaska, are still intact. They are considered to be domestic trades. Great Lakes domestic trade flourishes on a specialized basis of bulk cargoes of grain, coal, ore and some general cargo carriers in the business. The inland waterways can be omitted from the discussion as they do not support sea-going or lakes-going vessels but rather barges and towboats.

DECLARED MERCHANT MARINE POLICY OF THE UNITED STATES

In the so-called Magna Charta of the United States Merchant Marine, the *Act of 1936* declares it to be the policy of the United States to have a merchant marine sufficient for the national defense and foreign and domestic commerce of the United States. Such a merchant marine is to comprise the best equipped and most suitable vessels, sufficient to carry a substantial portion of the water-borne export and import foreign commerce and to serve on all foreign trade routes essential for maintaining the flow of such commerce.

Now that we have examined both direct and indirect subsidies and the nature of the tramp and domestic trades, as well as the declared merchant marine policy of the United States, let us apply our question separately to each of these segments of the United States Merchant Marine.

EXTENDING SUBSIDY TO TRAMPS

Construction subsidy is presently available to tramps but the very nature of the American tramp appears to dismiss the construction subsidy concept. A tramp is not a particular kind of ship; rather, it refers to a particular kind of operation. I doubt seriously if ever, in the United States, has a general cargo ship been constructed to operate as a tramp. New ships are built to operate as liners or as bulk carriers. Later, conditions may suggest the desirability of using the ship in the tramp trades but this is after it has been constructed. Tankers are built for chartering purposes but they cannot rightly be referred to as tramps.

To consider the extension of *operating* subsidies to tramps, a brand new concept is faced.

Title VI of the *Merchant Marine Act of 1936* states that vessels eligible for operating subsidies are those engaged in an essential service in the foreign commerce of the United States. As interpreted and applied by the agency that administers Title VI, this has meant vessels of a steamship line operating in one or several foreign trade routes found by the agency to be essential for the conduct of the foreign commerce of our country. A tramp does not operate on any particular route and thus would not be eligible for operating subsidies under this concept.

Moreover, Title VI probably could not apply to tramps because the

operating subsidies authorized are known as differentials. This means that their purpose is to enable the United States operator to compete with his principal foreign flag competitor by granting him a differential designed to equalize his costs of operation with the lower costs of his foreign competitor on a given foreign trade route.

What would be the principal competitor of the United States tramp ship? Perhaps it would be Greek or Norwegian flag vessels. But in the tramp business, these vessels operate world-wide. If it would be conceivable to consider operating subsidies for American tramps, the basis of such subsidies would be a world fleet.

If the concept of a route can be overcome, the question then arises whether tramps are essential for the foreign commerce of the United States.

On this point I have no doubts whatsoever. Tramps are essential for the conduct of the foreign commerce of the United States. In both the export and import trades, bulk cargoes are common. Consider the cargoes of grains, fertilizers, coal, ores, sugar and liquids. Of course, liners carry some portion, but their bulky and economical movement depends basically on full cargoes. Therefore, from the standpoint of being essential for the conduct of the water-borne export and import trade of the United States, tramps play an important role. On this basis, they are eligible for operating subsidy on some procedure that could be worked out if there is any disposition on the part of the Congress (and/or the administrative agency in charge of shipping subsidies) to accept this view. The fact that nothing in the United States has been done along this line is not the last word.

From the standpoint of essentiality for national defense, the tramp would appear to offer very little. One is inclined to say that a tramp is not readily available in case of an emergency because it travels all over the world. But is not the same true of a liner? The fact that a liner operates in a certain given trade does not make it available in case of emergency. When it is needed, it may well be at the foreign end of its route and just as inaccessible as a tramp.

Therefore, the question basically is this: Does Congress intend that tramps in foreign commerce be eligible for operating subsidies? Title VI of the *Merchant Marine Act of 1936* declares that such subsidies are to go to vessels operating on essential foreign trade routes—routes found by the administrative agency to be essential for the conduct of United States export and import trade.

There is no evidence that I can find to support the concept of operating subsidies for tramps. I admit that the fact they have never been considered is to beg the question but it is a fact, nevertheless. In February of 1962 this very matter was pointed up when the Secretary of Commerce refused to authorize a construction subsidy to Bethlehem Steel Company for the construction of two proposed 51,000-ton

ore carriers.¹ On the subject of tramps, the Secretary observed that such a procedure "has not been thoroughly considered and passed on by Congress." He further pointed out that to grant a construction subsidy for Bethlehem's private ore carriers could open the door to subsidizing 250 private (including tramp) vessels at a cost to the Government of \$1.5 billions. In light of the pious declarations of Congress on its intent and its frugality when it comes to appropriating the funds necessary to carry out this intent, the position of the Secretary of Commerce is well taken. The matter lies clearly in the hands of Congress, but one could argue also that the administrative agency might push the subject along.

Now that direct subsidies for tramps engaged in the foreign trade have been disposed of, what about indirect aid? The only form presently available is the 50-50 law that requires 50 per cent of all aid cargoes to be transported in United States flag vessels. American tramps are included and if they are not getting their share of the aid cargoes, Congress is not to blame but rather the agencies in charge of these shipments.

DOMESTIC TRADES

Vessels engaged in the domestic trades of the United States are not eligible for subsidy of any kind under present law. They have been protected from foreign competition for 145 years by giving them a monopoly of domestic operations; foreign flag vessels are prohibited from engaging in the domestic trades. Let us now take a closer look at the several segments of the domestic fleet.

Coastwise and Intercoastal Trades. Vessels operating in these trades travel on the high seas and they travel between two or more United States ports. In doing so, they compete with land transportation that covers the same domestic territory. If cargo is loaded at one United States port for discharge and consumption at another United States port, the water lines have frequently enjoyed an advantage. When cargo must be moved inland in order to reach a particular loading port and/or move inland again from a port of discharge, the water carriers' advantages disappear.

It is patent, therefore, that while the domestic water carriers are protected from foreign flag competition, they are face-to-face with the competition of land lines, both rail and highway. This competition has been so effective that common carrier coastwise and intercoastal lines have all but disappeared. This can be traced to both the inefficient operation of the water lines and some unique rate practices of the competing railroads. Under a policy of the Interstate Com-

¹ On March 28, 1962, Bethlehem announced the placing of an order for the two 51,000 dwt. ore carriers with a German shipyard.

merce Commission that may be considered to be benevolent insofar as the railroad lines are concerned, rates have been permitted that were designed to undercut the rates charged by the water lines. Of course, the water lines initiated this practice of undercutting the railroad rates.

But in time the water lines faced rapidly rising costs and uneconomic calls and the railroads were able to put in rates that damaged finally the prospects for the water lines. For example, at one time there was a famous Fourth Section practice by railroads serving the Pacific Coast from eastern origins. They quoted depressed rates at the Pacific seaports and loaded the decreases on inland cities. Under this sharp practice, it cost a shipper more to ship from St. Louis, Mo. to Denver, Col. than it did to ship to San Francisco, Calif. The railroad rate on citrus fruit from Florida to northern destinations was lower on certain days of the week when the water lines sailed than on other days when they did not sail. While some of these practices have been outlawed, the effect on the coastwise and intercoastal water carriers has been devastating.

Since the competition faced by these carriers is domestic in nature, there is no possible argument for extending subsidy to them. Indeed, the railroads themselves are in financial trouble and if the coastwise and intercoastal water carriers were to be considered for subsidy, the same would be necessary for the railroads and possibly certain motor carrier lines as well. It is a curious matter whereby domestic competition that can put a firm out of business is accepted as the price of free and open competition while competition from a foreign firm or steamship line calls for protection. Perhaps we could call this an aspect of nationalism.

NONCONTIGUOUS TRADES

These are the ocean services between United States continental ports and Puerto Rico, Hawaii and Alaska. They have long been considered an extension of the cabotage trade and, therefore, reserved exclusively for United States flag carriers. These services have no land competition and their water competition to and from the United States can be only from other American flag carriers, both liners and tramps. Developments in air transportation have been so rapid and so far-reaching that they now provide the greatest competition for the common carrier lines. This does not apply only to passengers. Some of the air services to these noncontiguous areas receive substantial indirect U.S. Government help and, insofar as they have been able to take business away from the water lines, a state of unfair competition exists. If the air lines compete successfully against the water lines in the noncontiguous trades and they do this because of government aid that they receive, then the water lines, in all justice, should also

receive direct aid. The exclusion of foreign flag vessels is no safeguard if subsidized United States air lines can take away their business.

On the other hand, American flag tramps are also protected from foreign flag vessels in the noncontiguous trades. These tramps generally operate inward with cargoes of sugar from Puerto Rico and Hawaii. This is a cargo that an air line is not likely to carry in the foreseeable future. It, therefore, appears that the tramps serving in the noncontiguous trades are not obliged to meet unfair competition and should be satisfied with the 100 per cent cargo assurance that they share with other United States flag carriers.

GREAT LAKES

United States flag carriers serving domestically on the Great Lakes enjoy the cabotage protection from foreign flag carriers, and their competition, whether lines or bulk carriers, comes from the land lines. Here again, as has been shown previously for the coastwise and inter-coastal carriers, the railroad lines have been permitted to engage in the same murderous rate practices. One example is the rate on beer from Wisconsin to eastern territory; it is lower when the water lines can operate on the Great Lakes than in the season of closed lake navigation. This kind of rate practice makes it difficult for United States common carriers to operate profitably on the Great Lakes. As a consequence, they have practically disappeared, although the opening of the St. Lawrence Seaway has given United States flag lines another reason to operate in and out of the Great Lakes. Since they can operate foreign from and to Great Lakes ports, they are eligible for both construction and operating subsidies. While these operating subsidies are suspended for any and all domestic carryings that a subsidized line carries, the United States flag line has some reason to operate apart from the domestic trade. It may even be able to carry domestic traffic for out-of-pocket rates because it may be necessary to lighten its load before transiting the St. Lawrence canals.

The bulk carriers on the Great Lakes still carry the coal, grain and ore in a most expeditious and economical manner. They have no competition from foreign flag carriers and the land lines cannot meet their charges in the season of open navigation. There is nothing, insofar as operating on the Great Lakes is concerned, that justifies a direct subsidy since the indirect aid of a monopoly over domestic cargo coupled with the opening of the St. Lawrence Seaway as well as the nature of the bulk cargoes combine to give vigor to United States flag operation. Moreover, the air lines have made little progress in taking cargo away from the land or water lines in this trade.

CONCLUSION

This paper has sought to deal with the question of extending subsidies to tramps and domestic trades. It is clear that construction

subsidies, according to law, are available to United States tramps engaged in the foreign trade but it has never been the practice in the United States to build a ship for the tramp service. Construction subsidies are not available to domestic trades but should these subsidies be extended to them? For vessels engaged in the coastwise, intercoastal and Great Lakes trades, such aid would make the plight of the railroad and motor carrier lines that compete with them even more difficult than it is. There would appear to be no justice in using United States Government funds to aid one kind of transportation at the expense of another. While this has been done in the past and is still done to some extent, it is not fair. Vessels in the noncontiguous trades do face competition from air transportation and if the United States air lines in these trades receive Government aid in the form of airfields, weather information, etc., then some aid is justified for the competing vessels.

It is simply amazing that Congress declares it to be in the public interest for the United States to have a merchant marine and then is niggardly in providing the funds necessary for this to be accomplished. If Congress cannot follow up this intention with acts required to carry out these intentions, then it should reconsider the entire merchant marine policy. To refuse construction aid to a private company on the ground that it would open the floodgates to hundreds of private owners is to misconstrue the objectives of the merchant marine policy. What is the difference between providing construction aid for vessels to be used by a private company operating as a common carrier and vessels for a private company using the vessels in its own business? Both operations are essential for the conduct of the foreign commerce of the United States.

Operating differentials for tramps in the foreign trade are conceivable but cannot be granted under present law. Since the essentiality of vessels is the prime requirement for aid under the provisions of the *Merchant Marine Act of 1936*, it seems to me that tramps are just as essential as liners. Therefore, I believe that the law should be changed in order to make it possible for tramps in the foreign trade to receive operating subsidies. As to operating subsidies for tramps in the domestic trade, this is another matter. My basic thesis is that both construction and operating aid should be given to any and all vessels engaged in the foreign commerce of the United States and that such aid should not be given to vessels engaged in the domestic trades. The 100 per cent guarantee to United States flag carriers in the domestic trades is sufficient aid to them in light of the unaided competition of the railroads and motor carriers with which they compete. The only exception to this statement is the possibility of aid to noncontiguous carriers, if air transportation in the noncontiguous trades receives aid of some kind.

WHAT SHOULD BE THE LEGAL BASIS OF MERCHANT MARINE POLICY? IS ACT OF 1936 SOUND IN PRINCIPLE?

Ira L. Ewers

"The Merchant Marine" is a wide term which includes many segments of water-borne transportation, foreign and domestic, passengers, cargo, liquids, bulk, common carrier and contract/private carriers, coastwise, intercoastal, or inland waterways, etc. Their only common denominators are water and vessels. Their other problems vary widely.

In a more restricted sense, the term is used to denote passenger, dry cargo, and tank vessels of over 1000 gross tons operating in the ocean trades of the United States, which, as of January 1, 1962, actively consisted of 937 vessels, 902 of which were privately owned and 35 Government owned. Thirty were combination vessels, 612 were freighters, and 296 were tankers. Of the combination and freight vessels, 304 comprised the subsidized fleet of fifteen different companies which operate on prescribed routes in the foreign trade and as common carriers.²

The remaining some 300 dry cargo vessels and the 200 tankers are unsubsidized and may operate in either the foreign or domestic trades as common, contract, or private carriers and upon either fixed or irregular routes or services. The problems of these groups vary so widely that, although they receive continuing study, they are beyond anything but a brief reference in the present inquiry.

With respect to the domestic water-borne commerce referred to in Section 101,³ which covers coastwise, intercoastal, Great Lakes, and that between the mainland and Hawaii, Alaska, Puerto Rico, etc., the pattern of the 1936 Act offers relatively little assistance. This is admitted, and separate studies are now being conducted. With

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² See *Merchant Marine Data Sheet*, January 1, 1962, Release MANR 62-5 of Maritime Administration.

³ *Merchant Marine Act, 1936*. A compilation containing this Act and other acts relating to shipping is attached for reference and for general information. Also attached is "Your Merchant Marine Fact File" prepared by the Committee of American Steamship Lines.

regard to tankers, ore carriers, tramps, and special-type vessels in the foreign trade, again the pattern and restrictions of the *1936 Act* are unavailing. Since 1952, such vessels may be eligible for construction differential subsidy, but it is doubted that there would be any real interest unless they could also receive operating differential subsidy. The restrictions on the latter seem to render it impractical and there has, therefore, been little interest. True, Bethlehem did apply recently for a construction differential subsidy on two ore carriers but this was denied, consistent with prior analogous decisions to the effect that such aid should be reserved for common carriers and not be granted to private carriers (see 3 FMB 703). The wisdom of this is debatable and Congressional hearings are to be held to review that policy, but to date it has arisen only in that one case.

More equitable administration of the foreign aid and 50-50 programs, permission to join conferences which is now reserved to common carriers, and permission to deposit earnings in aid of replacement programs have recently been suggested for the tramp lines.

Various other segments of nonshipping industries have found their problems out of balance with the rest of the country and ways have been found at least to reduce the imbalance, such as agricultural price support programs, quotas, increased customs duties, tax advantages, etc. These studies are continuing on other branches of the shipping industry.

We will discuss these questions only as they relate to the subsidized segment of the industry which operates passenger and cargo vessels in the foreign trades, as common carriers upon regular routes. Needless to say, all such vessels were built within the United States, are owned by citizens, and have crews which are also citizens.

WHAT SHOULD BE THE LEGAL BASIS OF OUR MERCHANT MARINE?

The answer to this inquiry has been formally reaffirmed by Section 101 of the *Merchant Marine Act of 1936*, reading as follows:

TITLE I—DECLARATION OF POLICY

SECTION 101. It is necessary for the national defense and development of its foreign and domestic commerce that the United States shall have a merchant marine (a) sufficient to carry its domestic water-borne commerce and a substantial portion of the water-borne export and import foreign commerce of the United States and to provide shipping service on all routes essential for maintaining the flow of such domestic and foreign water-borne commerce at all times, (b) capable of serving as a naval and military auxiliary in time of war or national emergency, (c) owned and operated under the United States flag by citizens of the United States insofar as may be practicable, and (d) composed of the best equipped, safest, and most suitable types of vessels, constructed in the United States and manned with a trained and efficient citizen personnel. It is

hereby declared to be the policy of the United States to foster the development and encourage the maintenance of such a merchant marine.

This declaration of policy implemented the recommendations of President Franklin D. Roosevelt⁴ made after two thorough studies of the problem. The inquiry propounded by President Roosevelt being somewhat similar to that assigned to me, I will quote it and his answers.⁵

I present to the Congress the question of whether or not the United States should have an adequate merchant marine.

To me there are three reasons for answering this question in the affirmative. The first is that in time of peace, subsidies granted by other nations, shipping combines and other restrictive or rebating methods may well be used to the detriment of American shippers. The maintenance of fair competition alone calls for American flag ships of sufficient tonnage to carry a reasonable portion of our foreign commerce.

Second, in the event of a major war in which the United States is not involved, our commerce, in the absence of an adequate American merchant marine, might find itself seriously crippled because of its inability to secure bottoms for neutral peaceful foreign trade.

Third, in the event of a war in which the United States itself might be engaged, American flag ships are obviously needed not only for naval auxiliaries, but also for the maintenance of reasonable and necessary commercial intercourse with other nations. We should remember lessons learned in the last war.

This declaration of policy was reaffirmed by Section 2 of the *Merchant Ship Sales Act of 1946*, and also is a substantial reaffirmation of the policy declared by the *Shipping Act of 1916* and the *Merchant Marine Acts of 1920 and 1928*.

This policy recently received somewhat unexpected reaffirmation. As is well known, Congressman Celler's Antitrust Subcommittee has been severely critical of the administration of various regulatory problems in the ocean shipping industry and it might have been suspected that he was not entirely in sympathy with other merchant marine problems, but here is what he says in the report of his Subcommittee which has just been released.⁶

... Interwoven with the pro-competitive thread of our merchant marine policy contained in the *Shipping Act of 1916*, however, is the policy of maritime fleet promotion. Congress has repeatedly reasserted its intention of maintaining a strong merchant marine flying the American flag and manned by American crews, capable of carrying at all times a substantial volume of our foreign trade.

The need for nurturing a merchant fleet with national allegiance has become increasingly clear as the twentieth century has progressed. Two world wars have demonstrated that an international power cannot be dependent upon ocean transportation media owing allegiance to alien flags without courting danger to its

⁴ *House Document No. 118, 74th Congress, 1st Session.*

⁵ *House Document No. 118, 74th Congress.*

⁶ *A Report on the Ocean Freight Industry* (pursuant to H. Res. 56), H. Rept. 1419, 87th Cong., 2nd Sess. (March 1, 1962), pp. 381-382.

national security. This conclusion is of equal force even in times of nonbelligerency. Eruptions in the far corners of the globe, economic and political tensions, unforeseen outbreaks of nationalism and xenophobia, these and innumerable other contingencies may at any moment seriously disrupt or distort traditional patterns of commercial intercourse on international trade routes.

Our national shipping policy has therefore sought to maintain at all times a strong merchant fleet owned by American citizens, operated by American crews, and fully capable of serving our international economic, military, and political commitments under all foreseeable circumstances, as well as the maximum possible freedom of competition among ocean carriers.

After a careful study, this subcommittee has concluded that our national shipping policy is basically sound.

In addition to the foregoing persuasive reasons for an American Merchant Marine, I am impressed with the following which Senator Magnuson placed in the *Congressional Record*.⁷

Facts about the American Merchant Marine

Mr. Magnuson. Mr. President, the Propeller Club of the United States is a nation-wide, one might even say, a world-wide, organization of shipping, exporting, industry, and professional people banded together for the specific purpose of promoting and supporting an American Merchant Marine and allied industries adequate to meet the requirements of national security and of the economic welfare of the United States.

Each year the Propeller Club conducts an American Merchant Marine Conference as part of its program of public relations, education, and good will among exporters, importers, and the public generally. Its 33d annual conference, held in Detroit the past October, very properly was devoted largely to problems of the country's 'Fourth Seacoast', the St. Lawrence Seaway.

As an introduction to its recently published record of resolutions adopted at this 33d annual convention, there is presented a brief summarization of 'Facts You Should Know about the American Merchant Marine.' This summary is so impressive, and so deserving of widespread public attention and study, that I ask unanimous consent that the statement be printed at this point in the *Record*.

There being no objection, the statement was ordered to be printed in the *Record*, as follows:

Facts You Should Know about the American Merchant Marine—What It Is

It is an American industry of substantial size, operating about 1000 ships of various types in ocean trades and 5000 vessels in lakes and rivers, providing over one-half million jobs in vessel operations, ship construction and repair, port services and supplies, fuel oil, insurance, longshore and seafarer wages, etc.; providing about \$2 billion in payrolls annually.

Role of American Merchant Marine as a Customer of U. S. Business

It spends with American business concerns about \$800 million per year in goods and services.

Its food bill, for foodstuffs, purchased entirely from United States companies, for feeding passengers and crew members, is \$75 million annually.

It gives \$75 million in business to other American companies each year for ship supplies.

American insurance companies enjoy \$72 million in insurance premiums from American shipping; oil companies \$168 million in fuel oil and other petroleum product sales; and shipyards \$99 million in repairs.

⁷ *Congressional Record*, 1960, p. 1077.

It will spend \$3 billion in the next few years for ocean vessels alone in the greatest shipbuilding program in its peacetime history. All of these expenditures will be made in American shipyards.

How the American Merchant Marine Serves the Economy of the United States

Besides being a great first-rate customer of American business and employer of American industrial workers, the American Merchant Marine serves a vital role in keeping the wheels of American industry turning.

It provides the only reliable transportation medium for the \$32 billion annual import-export business of the United States on which an additional 4½ million Americans rely for their jobs.

It is the only insurance in times of stress or emergency that our American exports can move to their foreign markets.

This means safe, reliable transport for a quarter of our cotton; a third of our wheat; one-half of our entire rice crop; a quarter of all tobacco raised in the United States; the equivalent of 100 per cent of all of the agricultural products of ½ acre out of 10 in the United States.

It guarantees to the industry of the United States, because by law it must serve U. S. trade, that the flow of essential imported raw materials will not stop and paralyze our mills and factories. It guarantees transport to our consumption centers of the world's raw materials, such as manganese, bauxite, lead, tin, nickel, natural rubber, and other essential metals and ores whose primary source is often overseas and without which we could not even produce steel; could not operate the factories of the Nation and could not adequately prepare for defense.

Its domestic oceangoing fleet of modern vessels, serving the intercoastal and coastwise trade, serves American industry in two important ways.

It offers the largest single transport container, in which goods can be handled on certain routes at a lesser cost than by any other medium.

It provides an effective stabilizing force on land transport rates in the basic commodities without which our industry would be burdened with excessive costs.

Its great fleet of river and lake vessels, both self-propelled and towing types, provides a transport system for finished goods and raw bulk commodities in quantities and at rates impossible through any other medium. In the case of many bulk cargoes, these vessels and the transport system they constitute make possible the very industries they serve.

American flag tanker vessels provide the crude and refined petroleum products which are essential to every industrial operation on the American scene.

What the American Merchant Marine Costs

Contrary to generally accepted views, the American Merchant Marine does not cost the American taxpayer 'one red cent,' according to Mr. Clarence G. Morse, Federal Maritime Administrator and Chairman, Federal Maritime Commission.

It received many millions in harbor and navigation project appropriations, but returned on an average of \$1.50 for each \$1 spent for such projects in economic benefits to the industries and communities along our rivers, lakes and coastlines.

It received \$449 million in operating subsidies (one-fourth of our ocean fleet only) from 1946 to 1955, and paid back into the U. S. treasury \$422 million in taxes.

Millions in additional taxes were realized out of its purchases of supplies, food-stuffs, fuel oil, new ships, port services, and the myriads of other items bought from American business to run a modern American merchant fleet.

The basic policy is, therefore, too firmly established to be the subject of controversy.

The Defense Department, of course, determines the national de-

fense needs relating to shipping, and the Department of Commerce is mandated to, and does, make current studies of commercial requirements. I know of no better way of securing this information.

IS THE ACT OF 1936 SOUND IN PRINCIPLE?

A further answer to the first inquiry also involves the second inquiry. While the need of an American Merchant Marine is not controversial, this has not always been true with respect to how that policy should be implemented or effectuated.

Here again, however, the question has been answered for us. Said President Roosevelt in the message quoted earlier:⁸

In many instances in our history the Congress has provided for various kinds of disguised subsidies to American shipping. In recent years the Congress has provided this aid in the form of lending money at low rates of interest to American shipping companies for the purpose of building new ships for foreign trade. It has, in addition, appropriated large annual sums under the guise of payments for ocean-mail contracts.

This lending of money for shipbuilding has in practice been a failure. Few ships have been built and many difficulties have arisen over the repayment of the loans. Similar difficulties have attended the granting of ocean-mail contracts. The Government today is paying annually about \$30,000,000 for the carrying of mails which would cost, under normal ocean rates, only \$3,000,000. The difference, \$27,000,000 is a subsidy and nothing but a subsidy. But given under this disguised form it is an unsatisfactory and not an honest way of providing the aid that Government ought to give to shipping.

I propose that we end this subterfuge. If the Congress decides that it will maintain a reasonably adequate American Merchant Marine, I believe that it can well afford honestly to call a subsidy by its right name.

Approached in this way a subsidy amounts to a comparatively simple thing. It must be based upon providing for American shipping Government aid to make up the differential between American and foreign shipping costs. It should cover first the difference in the cost of building ships; second, the difference in the cost of operating ships; and finally, it should take into consideration the liberal subsidies that many foreign governments provide for their shipping. Only by meeting this threefold differential can we expect to maintain a reasonable place in ocean commerce for ships flying the American flag, and at the same time maintain American standards.

Frequently, "subsidy" is construed to mean something for nothing, but it can be seen that this is not the sense in which it is here used. "Parity payments" or "compensation" (to make equal) would be more accurate.

The *Merchant Marine Act of 1936* effectively carries out those recommendations.

Why it took us so long to arrive at this solution, I do not know. The principle is by no means new. Practically since the birth of the Republic we have had tariff duties to equalize the lower costs of production abroad with those of the higher economy in the United

⁸ H. Doc. 118, 74th Congress.

States. In manufacturing, for instance, the average hourly wage in the U. S. is \$2.36 as against 94 cents in the U. K., 68 cents in West Germany, 39 cents in Italy, and 30 cents in Japan.⁹ In almost every daily purchase that we make, the cost is higher than it would have been without tariff protection. The American public cheerfully pays those higher costs to protect our economy and way of life, and I am sure they would just as cheerfully contribute to this subsidy-for-parity when they understand it in that light.

Under previous plans, there was very little new construction. From 1920 to the *1936 Act* there were only two cargo vessels constructed in the United States. The World War I fleet was worn out and the companies had no reserves with which to make replacement. Concededly, those years were depression years.

Under the *1936 Act*, however, applicants were not eligible for operating differential subsidy contracts unless they agreed to replace their World War I vessels with the then newly constructed "C" Type Vessels, to replace the "C" Type Vessels with the new vessels as they approached the end of their statutory year life, and to replace the latter vessels with newer vessels, and so on. That is a monumental undertaking and many otherwise eligible operators could not or would not assume it.

The *1936 Act* did not leave this accomplishment to mere contractual obligation. To prevent the dissipation of funds for other purposes, the Act required that holders of operating differential subsidy contracts deposit in a capital reserve fund jointly controlled by the Government all depreciation and all recoveries for vessels lost or sold. That fund can only be used for building new ships.

A similar safeguard and fund is required with respect to earnings. All earnings over a permissible return must be deposited in a separate special reserve fund so as to be available in lean years because of the cyclical nature of the industry.

Here I should like to emphasize that the *1936 Act* in no sense assures profits as do some other forms of Government aid. (See *49 USC* § 1376 (b)). It only assures that the American operator has parity with his foreign competitors in the costs of building and operating vessels. In reality the so-called construction differential subsidy is really a shipbuilding subsidy and never even goes through the hands of the operator. It is paid directly to the shipyard. On the items of operating differential, the operator does receive somewhat belatedly the difference between U. S. and foreign costs, but must pay currently the increased costs of wages, repairs, and insurance.

Previous programs, while they involved the expenditures of large sums of money, left much to be desired in the way of accomplishment.

⁹ See *Saturday Evening Post* of February 24, 1962, page 19.

As will be shown later, this is not true of the *1936 Act*.

It may be suggested that I have quoted only those portions of messages which sustain my conclusions, but note President Roosevelt's statement:

Reports which have been made to me by appropriate authorities in the executive branch of the Government have shown that some American shipping companies have engaged in practices and abuses which should and must be ended. Some of these have to do with the improper operating of subsidiary companies, the payment of excessive salaries, the engaging in business not directly a part of shipping, and other abuses which have made for poor management, improper use of profits, and scattered efforts. (*H.Doc. 118*, 74th Congress)

Neither the *1936 Act* nor the Operating Differential Subsidy Contracts left the correction of those abuses to the good intentions of the operators. Both are replete with provisions to make impossible the recurrence of the abuses.

The Department of Commerce has prepared an outline of restrictions covering: number of annual sailings in specific services; ship characteristics and number; ship replacement programs; construction of ships in domestic yards; use of American-made supplies; most economical and efficient operation; prohibition of coastwise and inter-coastal shipping operation or management by subsidized operators; use of unsubsidized vessels in competition with subsidized lines; use of chartered vessels; use of foreign vessels; auxiliary shipping services; unrelated business activities; change of ownership or management; Government recapture of subsidy; dividend payments, salary payments; establishment of reserve funds; financial reporting and audit.

One more is currently under discussion. All U. S. ships may be requisitioned by the Government for use or title in emergencies. If they were not built with a construction differential subsidy, the Government must pay just compensation or fair market value. If they were built with a construction differential subsidy, however, the Government will not pay more than depreciated cost. Recent testimony was to the effect that on a *C-2* vessel, for example, this amounted to a difference of from \$600,000 to \$800,000.

Government War Risk Insurance makes the same distinction.

CAN THE 1936 ACT BE MADE ADEQUATE?

My answer is that the *1936 Act* has been, is, and, I hope, always will be adequate, at least for this segment of the industry.

The present operating differential subsidy agreements provide for the orderly replacement of some 300 cargo and passenger vessels as they approach the end of their useful lives, at a total cost of some four billions of dollars. To date some 84 ships have been built or

contracted for under this program. Compared with the few vessels built under previous aid programs, this represents real accomplishment, which is enhanced by the remaining number of vessels the operators are obligated to build under their subsidy contracts over the next few years.

The Government's share in these costs will be approximately one-half, which is a large sum of money, but it represents even more to the private shipowner. And where do the shipowner's funds come from? Largely from the reserve funds so wisely established by the *1936 Act*. Whether the shipowners can continue to earn enough depreciation to continue to finance this program depends, of course, on the status of shipping generally, earnings from which have declined of late.

The contribution which private shipowners are making to this program does not seem fully appreciated. An outline of one of the ventures these operators must undertake is illustrative. The C-type vessels cost the operators around \$100 per dwt., upon which they have generally been making a small profit. Depreciation on the old vessels will run around \$60-70,000 a year. The new vessels are costing the operators around \$500 a dwt. and the annual depreciation, therefore, increases to over \$200,000 a year per vessel. When this is multiplied 20, 30, or 40 times to cover the fleets of those operators, the magnitude of their undertaking is more apparent.

For an operator to cooperate in this transition requires among other things not only a confidence that the *1936 Act* is effective and will continue so to be, but also considerable optimism. However, although one or two operators have abandoned their participation in this program, the remaining 15 operators are going ahead with their part of the program, as evidenced by their operations and by their construction of new vessels.

Therefore, the only other factor necessary to the continued success of the *1936 Act* is continuing Federal appropriations. These divide into two parts.

1. The operating differential subsidy payments are firm, fixed contractual obligations. The Government must live up to them or respond in damages. Furthermore, in the event of Governmental default, the operator may transfer his vessels to foreign registry under Section 12. Default has never been suggested.

2. There is, however, more flexibility in the administration of the construction differential subsidies.

The Government, about 1955, drew up an over-all shipbuilding program or schedule bearing in mind: (a) the national defense requirements for vessels; (b) the preservation of at least minimum shipbuilding skills for emergencies; and (c) the orderly replacement of old vessels. It then divided the number of vessels required annually

among the subsidized operators, year by year, through 1970. About 24-25 new vessels would be produced annually.

These were absolute obligations but with escape clauses, because it was obviously impossible to accurately predict developments over a 15-20 year period. So it has been and will continue to be necessary from time to time to accelerate, defer, and modify these schedules. This is done by consultation between the operators and the Maritime Subsidy Board. Programs have been advanced, deferred, and modified. So far as I know, no reasonable request has been denied. I am also pleasantly surprised that, notwithstanding the magnitude of the undertakings, more operators seem to want to go ahead or accelerate than to defer. The 25-ships-a-year program is, nevertheless, somewhat behind schedule. This is partly the result of budget limitation and agreements between the Government and the operators.

I personally feel that the original large program may prove unduly ambitious in later years. Most of the companies originally had substantial reserve funds and were operating at a profit. As the program progressed, however, and 10 to 15 or 20 new ships were built, the reserve funds were exhausted or committed, earnings decreased, etc., so a new look has to be taken from time to time. To date I must admit that I could not document a complaint that the program has not been administered fairly and cooperatively.

Of course, the shipbuilders are not entirely happy because, as against some 25 ships or so a year, they have over 100 building ways. To be sure, they have some work for the Navy and others, but their surplus ways have made competition very severe, but that is hardly a problem for this paper.

Will the Government continue to finance their share of the replacement plans? I think so. As one prominent official put it, if the operators did not cooperate, the Government would have to build the ships, anyway!

The cost is running around \$100,000,000 a year. Total Government expenditure for subsidy and subsidy-like programs is running around \$7,000,000,000 a year. I am sure that if our taxes are used for such worthy causes, others will not object to some of their taxes being used for the Government's part of this vessel replacement program. About one-half of that \$7,000,000,000 is labeled agricultural aids, price supports, etc. Putting it another way, almost all of our industries get aid in some form, tariff protection, immigration restrictions, tax advantages, etc. This is one way of life.

IS THE PRESENT FLEET OF "FLAGS OF CONVENIENCE" SHIPPING NECESSARY TO MEET NATIONAL SECURITY REQUIREMENTS UNDER PRESENT MARITIME OPERATING LAWS?

Vice Admiral Ralph E. Wilson, USN (Ret.)

FLAGS OF CONVENIENCE

One of the important maritime problems facing the United States today is that posed by "Flags of Convenience" shipping.

For national security the ideal situation would be to have sufficient American flag shipping readily available to meet all military and civilian requirements in times of national emergency. Unfortunately, this situation does not exist. An analysis of the Flags of Convenience problem in this relationship follows.

ORIGIN OF "FLAGS OF CONVENIENCE"

The "Flags of Convenience" concept had its origin more than forty-five years ago.

Prior to World War II, the flags of Panama and Honduras were used to some degree by foreign owners as registries of convenience—for purposes of reducing operating costs, deferred taxation on earnings, and other reasons.

Following the outbreak of World War II, and prior to our entry therein, the United States Government encouraged the transfer of American-owned merchant ships from U. S. flag to Panamanian flag. This permitted our allies to receive increased aid at a time when our own *Neutrality Act* prohibited American flag ships from sailing into the war zone.

Upon entry of the United States into World War II, American-owned merchant ships under the Panamanian and Honduran flags were taken promptly under U. S. control and employed to our best advantage. After World War II, Liberia, because of its nonrestrictive maritime laws and lack of emergency shipping requirements, was in-

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cluded among the few countries qualifying for Flag of Convenience registry.

MEANING OF "EFFECTIVE U. S. CONTROL"

The term "effective United States control" of shipping applies to all American-owned shipping under foreign registry which can be expected to be available on request by the U. S. Government in time of national emergency.

Immediately following World War II, the concept of effective U. S. control was born of necessity in the minds of Defense Department planners as the only practicable and valid means of meeting serious emergency deficiencies in readily available American-owned shipping. It has consistently proved to be a necessary planning expedient since that time.

It has never been claimed that the concept of effective U. S. control gives the United States an ironclad hold over these ships. It will be pointed out later that many of these ships can legally transfer from Panamanian, Liberian, and Honduran registry without obtaining permission from U. S. governmental authority. The ships currently listed as considered to be under effective U. S. control are expected to be available to the United States in the immediate future but the United States cannot be assured that all of the same ships will be available at a later date. The list, therefore, requires constant review. Any reductions are a matter of concern since they aggravate an already existing deficiency.

Some doubt has been expressed on what real assurance the United States has that the Flags of Convenience ships considered to be under effective U. S. control would in emergency situations come indisputably under effective United States control. The Department of Defense is confident that, at least in large part, they would, for the following reasons:

1. The absence of operational control restrictions in the maritime laws of Panama, Liberia, and Honduras presents no ban to the U. S. in recalling Flags of Convenience shipping to U. S. control. Such restrictions are present in the maritime laws or national policy of all other countries.

2. The relatively small requirement of Panama, Liberia, and Honduras for this shipping to meet their actual national needs indicates an absence of necessity for these nations to seek to prevent return of this shipping to the U. S. for periods of emergency.

3. Contracts with the Maritime Administration or assurances provided the U. S. Government by the shipowners, made by the beneficial owners of the Flags of Convenience ships with the Maritime Administration, require said owners to make their ships available in time of national emergency upon call of the Maritime Administration.

4. Related considerations pertaining to protection of shipping, war risk insurance, ship warrants, operational procedures, and ship maintenance:

a. Only the U. S. Government affords war risk insurance to American owners and in return receives a commitment that the ship insured will be returned to U. S. control when called by the U. S.

b. The U. S. will provide the most effective naval protection of the ships concerned, hence owners are likely to return their ships to U. S. control to be assured of priority of protection.

c. Use of U. S. port facilities for bunkering, provisioning, and maintenance can be denied to owners refusing to comply with requests for U. S. control.

5. Precedents were established in World War II, when all American-owned ships under Panamanian and Honduran flags were assimilated into the U. S. war effort without serious difficulty.

In 1957, appearing before a committee of Congress, the Secretary of the Navy stated:

"It is imperative to defense planning that we consider each and every United States-registered ship or foreign-registered, United States citizen-majority-owned ship, the possible need for seizure or requisition notwithstanding, as forming an integral and positive part of our nation's mobilization potential. Accordingly, I assure you that the term 'effective United States control' is a sound concept."

NATIONAL SHIPPING REQUIREMENTS

The United States must be prepared today—and throughout the foreseeable future—to deal immediately and effectively with any emergency that may be forced upon us. We must be ready at all times to fight limited wars, or general war, or to support our foreign policies under tense conditions short of actual conflict.

In addition to the military shipping requirements, the shipping requirements to support the civilian economy under conditions of either general or limited war will be substantial. The operation of the U. S. economy in peace and war is dependent on the continued importation by sea of vast quantities of raw materials. The operation of a number of highly vital sectors of our economy and, consequently, of our war-making ability, depends upon the uninterrupted import of large quantities of raw materials which must be transported by ship. About 17 per cent of our national oil consumption, 32 per cent of our iron ore consumption, and about 85 per cent of our bauxite is imported by sea. Many other commodities must be obtained from foreign sources.

More than a third of the total industrial production of the entire world and almost one-half the entire world output of raw materials are now channelled to the needs of the American economy. With the

exception of coal and most agricultural commodities, the United States is no longer self-sufficient in natural resources. These tremendous requirements can only be met by sea transportation.

The ability to meet our anticipated military and civilian economy emergency needs is dependent to a large degree on the ready availability of active, privately-owned merchant ships employed in gainful ocean commerce. The degree of promptness with which sealift responds in an emergency will have an important impact on the outcome. Time may not permit the activation of many idle ships. A serious war crisis could well become a race against time to evacuate nationals, to redeploy troops and equipment, or to augment and resupply existing forces overseas. To be prepared for such situations, we must put first reliance on the ready availability of active modern merchant ships of all types.

The United States, today, is also engaged in a large-scale foreign aid program throughout the world. The delivery of this foreign aid is almost entirely dependent upon sea transportation. Under conditions of emergency, this program would likely have to be continued to a certain degree to many areas. Some recipient countries have little or no merchant marine and must rely upon other merchant fleets of the world, including the United States, to meet their shipping needs.

The strategic importance of ocean transportation in a national emergency generates large requirements for the United States. It is essential that we effectively control sufficient active merchant-type shipping to promptly meet initial emergency sealift requirements.

United States Ocean Shipping Resources. The United States ocean shipping resources consist of all shipping under U. S. flag plus American-owned foreign flag shipping under effective U. S. control.

TYPES OF U. S. FLAG OPERATIONS

The *Merchant Marine Act of 1936* states that it is necessary for the national defense and development of its foreign and domestic commerce that the United States shall have a merchant marine:

- 1) sufficient to carry its domestic water-borne commerce and a substantial portion of the water-borne export and import commerce;
- 2) capable of serving as a naval and military auxiliary in time of war or national emergency;
- 3) owned and operated under the United States flag by citizens of the United States, insofar as may be practicable;
- 4) composed of the best equipped, safest, and most suitable types of vessels constructed in the United States and manned with a trained and efficient citizen personnel.

Further, the *Merchant Marine Act of 1936* states that it is the declared policy of the United States to foster the development and encourage the maintenance of such a merchant marine.

The implementation of national maritime policies and the exercise of certain elective rights on the part of private industry have resulted in dividing active American-owned merchant shipping into four separate segments, as follows:

Subsidized Shipping Under U. S. Flag. The subsidized segment of the active U. S. flag merchant fleet amounts to a little over 300 berth line ships of passenger or general dry cargo types. They operate over essential trade routes in direct competition with foreign shipping. They are required to provide regular berth line service under mandatory voyage-scheduling procedures established by the Maritime Administration. The ship owners receive operating differential subsidies to offset average differences between American operating costs and foreign operating costs. The subsidy is only sufficient to put the American operator in a competitive position with foreign flag berth operation on the same route.

When the ships of these owners are replaced, construction differential subsidies are paid to the U. S. shipyards which construct them.

Nonsubsidized Shipping Under U. S. Flag. The *Merchant Marine Act of 1936* does not authorize an operating differential subsidy for tankers, industrial bulk carriers, ships engaged in domestic commerce or protected U. S. coastal trade, nor for dry cargo ships engaged in foreign trade which do not provide regularly scheduled services over trade routes approved by the Maritime Administration. The nonsubsidized segment of the active U. S. flag merchant fleets amounts to about 690 ships.

Much of the unsubsidized fleet engaging in foreign commerce, including tankers operating as bulk carriers, has benefited substantially in the past from operations under the *Cargo Preference Act*. The freight rates paid on government cargo have been sufficient to offset operating costs. Most of the remaining nonsubsidized ships under U. S. flag are either engaged in the coastal trade reserved exclusively for U. S. flag ships or employed as industrial carriers with assured cargoes.

Existing inventories of sealift resources under U. S. flag, as of 1 January 1962, are as follows:

| <i>General Cargo Ships</i> | <i>Number</i> | <i>Deadweight Tonnage</i> |
|----------------------------|---------------|---------------------------|
| Active | 635 | 6,706,700 |
| Reserve Fleet | 1,253* | 12,704,300 |
| Total | 1,888 | 19,411,000 |
| <i>Bulk Cargo</i> | <i>Number</i> | <i>Deadweight Tonnage</i> |
| Active | 65 | 980,200 |
| Reserve Fleet | None | None |
| Total | 65 | 980,200 |

* Includes about 900 Liberty ships of limited wartime value.

| <i>Tankers</i> | <i>Number</i> | <i>Deadweight Tonnage</i> |
|--|---------------|---------------------------|
| Active | 368 | 7,375,800 |
| Reserve Fleet | 78 | 959,100 |
| Total | 446 | 8,334,900 |
| <i>Passenger Ships/ Transports</i> | <i>Number</i> | <i>Deadweight Tonnage</i> |
| Active | 35 | 292,900 |
| Reserve | 90 | 703,800 |
| Total | 125 | 996,700 |

The active U. S. flag sealift capability is comprised of active merchant ships under U. S. flag and merchant type ships operated by the Military Sea Transportation Service (MSTS).

As of 1 January 1962, the active private U. S. flag fleet portion of these resources consists of 989 ships. This shipping is comprised of 563 general cargo ships, 65 bulk cargo ships, 343 tankers, and 18 passenger ships, and totals approximately 14,000,000 deadweight tons.

U. S. OWNED FOREIGN FLAG SHIPPING UNDER EFFECTIVE CONTROL

U. S.-controlled foreign flag shipping consists of certain active ships registered under the Flags of Convenience. Existing inventories of this shipping considered to be under effective U. S. control for emergency purposes, as of 1 January 1962, are as follows:

| <i>Cargo Ships</i> | <i>Number</i> | <i>Deadweight Tonnage</i> |
|--|---------------|---------------------------|
| General Cargo & Reefer | 84 | 816,000 |
| Bulk Cargo | 68 | 1,841,900 |
| Tankers | 265 | 8,163,200 |
| <i>Passenger Ships/ Transports</i> | 3 | 20,600 |

These 84 general cargo and reefer ships, 68 bulk cargo carriers, 265 tankers, and 3 passenger/transports total approximately 11,000,-000 deadweight tons.

Since it has been previously pointed out that the ability to meet our anticipated military and civilian economy emergency needs must be insured to the maximum practicable degree by the ready availability of active, privately owned merchant ships employed in gainful ocean commerce, it is apparent that the most important elements of our shipping resources are the active U. S. flag shipping and the Flags of Convenience shipping considered to be under effective U. S. control.

Table 1 portrays a quantitative comparison of this active U. S. flag shipping and Flags of Convenience shipping.

In terms of numbers, the Flags of Convenience fleet is about 40 per cent as large as the U. S. active fleet, but in terms of total tonnage or carrying capacity it is more than three-quarters as large. This

latter fact is the result of the Flags of Convenience fleet being composed chiefly of large tankers and bulk carriers.

Table 2 gives an age comparison of Flags of Convenience shipping and active U. S. shipping.

Table 1. Quantitative Comparison of Flags of Convenience Shipping and Active U.S. Flag Shipping, 1 January, 1962

| <i>Total (All Types)</i> | <i>No. Ships</i> | <i>Dwt.</i> |
|----------------------------------|------------------|-------------|
| Active U.S. Flag | 989 | 14,192,200 |
| Flags of Convenience | 420 | 10,841,700 |
| <i>Total General Cargo</i> | | |
| Active U.S. Flag | 563 | 6,066,500 |
| Flags of Convenience | 84 | 816,000 |
| <i>Total Bulk Cargo</i> | | |
| Active U.S. Flag | 65 | 980,200 |
| Flags of Convenience | 68 | 1,841,900 |
| <i>Total Tankers</i> | | |
| Active U.S. Flag | 343 | 6,992,200 |
| Flags of Convenience | 265 | 8,163,200 |
| <i>Total Passenger/Transport</i> | | |
| Active U.S. Flag | 18 | 151,300 |
| Flags of Convenience | 3 | 20,600 |

Table 2. Age Comparison of Flags of Convenience Shipping and Active U.S. Flag Shipping, 1 January, 1962

| <i>Total (All Types)</i> | <i>No. Ships</i> | <i>Dwt.</i> | <i>Per Cent of Total</i> |
|-------------------------------|------------------|-------------|--------------------------|
| Active U.S. Flag | 989 | 14,190,200 | 100 |
| Flags of Convenience | 420 | 10,841,700 | 100 |
| <i>Total Under 5 Years</i> | | | |
| Active U.S. Flag | 90 | 2,403,900 | 16.9 |
| Flags of Convenience | 131 | 5,572,400 | 51.4 |
| <i>Total 5-9 Years</i> | | | |
| Active U.S. Flag | 74 | 1,390,300 | 9.8 |
| Flags of Convenience | 71 | 2,124,500 | 19.6 |
| <i>Total 10-14 Years</i> | | | |
| Active U.S. Flag | 43 | 588,000 | 4.2 |
| Flags of Convenience | 33 | 778,600 | 7.2 |
| <i>Total 15 Years or Over</i> | | | |
| Active U.S. Flag | 782 | 9,808,000 | 69.1 |
| Flags of Convenience | 185 | 2,366,200 | 21.8 |

It can be seen that almost 70 per cent of the total active U. S. flag shipping is fifteen years old or over. Nearly all of these ships were mass-produced for specific wartime purposes and many of their design features were matters of expediency rather than choice. They are outmoded from the standpoint of modern design. Stated briefly, a large majority of the U. S. flag shipping is rapidly approaching block obsolescence.

In contrast, it can be seen that one-half of the total Flags of Convenience deadweight tonnage is under five years of age. This tonnage is of newer design, larger capacity, and greater speed and is almost entirely in tankers and bulk carriers, which are most important types.

While the total number of Flags of Convenience ships and the total deadweight tonnage contained therein are not as large as those of the total active U. S. flag fleet, the qualitative value of the Flags of Convenience shipping in tankers and ore carriers is quite superior to that of the U. S. flag merchant fleet.

Respecting their expected availability status, these Flags of Convenience ships consist of two groups. In the first group, numbering slightly less than one-half of the ships, are those that were built in the United States, originally registered in the United States but permitted by the Maritime Administrator to transfer to Panamanian, Liberian, and Honduran registry subject to contractual stipulations (1) that their owner would make them available to the United States in an emergency and (2) that the owner could not transfer the ship further foreign without approval of the Maritime Administrator. These are the older ships and they were for the most part built during World War II.

The second group, constituting slightly more than one-half of the ships but representing two-thirds of the deadweight tonnage and the most modern ships, was built foreign, never registered in the United States, and their owners are free to transfer their registry as they see fit. In any such transfer, however, they may be expected to pay due regard to assurances on commitments they have made to the U. S. Government that their ships will be made available in time of emergency.

It is often proposed that some reliance might be put on NATO nations to assist in providing our emergency shipping needs. This may be true in a NATO war, but this is only one of many emergency situations which may arise. Even in a NATO war it is more probable, however, that the total combined shipping requirements of these nations will exceed the total shipping capabilities available. Additionally, some delay is to be expected before allocation of shipping can be fully effective. Of utmost significance is the fact that the interests of the United States are global, and emergencies may arise wherein our interests would not be identical with those of our European allies.

ADEQUACY OF UNITED STATES SHIPPING RESOURCES TO MEET NATIONAL SECURITY REQUIREMENTS

Previous evaluations of shipping requirements and availabilities have consistently shown that the United States does not have sufficient active merchant shipping to meet our initial needs for general war, even when we combine the total of U. S. flag and U. S.-controlled foreign flag shipping.

A 1961 military evaluation of shipping availabilities to meet purely military requirements in situations of emergency shows that there is a significant shortage of active merchant shipping to meet the initial United States needs in the general cargo category. Shipping availabilities considered in this evaluation included all shipping under U. S. flag plus those American owned ships under foreign flag which meet the criteria of effective U. S. control. Civilian economy requirements were not included in this evaluation, and losses to shipping resources from enemy action were not considered. Obviously, both of these factors will materially add to the deficit already existing.

Considering these factors, it is estimated that the United States could meet about 70 per cent of the shipping requirements under general war conditions.

Under the most optimistic assumptions, and on a quantitative basis only, the United States still possesses a marginal capability to carry out the sea transportation tasks of a general war. In situations of emergency and from the point of view of purely military requirements, there is a significant shortage of active merchant shipping to meet the initial United States needs in the general cargo category.

DEPARTMENT OF DEFENSE POLICY STATEMENT

In August 1961, the Deputy Secretary of Defense, Mr. Gilpatric, addressed a letter to the Honorable Carl Vinson, Chairman of the House Armed Service Committee, apprising him of the importance of the Flags of Convenience issue and including a complete statement of the Department of Defense policy. The statement of policy follows:

1. The primary interest of the Department of Defense in "Flags of Convenience" shipping relates to the impact on our National Defense posture and this interest is to insure the availability under U.S. control of as much of this shipping as may be needed in the event of national emergency. The amount of active U.S. flag shipping now available is inadequate for almost any situation of war or emergency and must be augmented by shipping which can be brought under our direct control as required in the event of emergency.

2. It is considered imperative that "U.S. effective control" of "Flags of Convenience" shipping be retained. Further, it is considered that such "Flags of Convenience" shipping as is covered by agreements or contracts with owners can be brought under our operation control as was done in World War II.

3. This dependence on effective control of "Flags of Convenience" shipping for emergency use is an expedient. It would be much more desirable to have adequate U.S. flag tonnage available. However, this ideal situation does not exist and, until enough U.S. flag tonnage is available, we will need to rely on "Flags of Convenience" ships.

4. Until such time as our national emergency needs can be completely met by modern American flag shipping, the Department of Defense has no recourse but to support the "Flags of Convenience" concept. The possible loss of the shipping capability represented by American-owned shipping of PANLIBHON registry to uncontrolled registries is of great concern to the Department of Defense.

Mr. Vinson replied to Mr. Gilpatric's letter, indicated his concurrence, and published copies of the exchange of the correspondence in the *Congressional Record*.

OPPOSITION TO FLAGS OF CONVENIENCE OPERATIONS

The operation of ships by American owners under the Flags of Convenience has long been criticized by foreign shipping interests and certain European governments for economic reasons relative to competitive ocean trade. Their major objective is to drive the Flags of Convenience off the high seas. Their motivation is simple. If registry under these flags can be made untenable, the ships will have to be transferred to other flags, and they feel that the bulk of the tonnage would be transferred to the flags of the European maritime nations. Such transfers would increase the tax revenues of these countries and at the same time eliminate competition of what they claim to be tax-free shipping.

Further, the operation of ships by American owners under the Flags of Convenience continues to be a target of strong opposition by maritime labor groups. These groups make two assertions which, apparently, are the basis for their opposition. First, it is asserted that the Flags of Convenience ships are substandard with respect to design, maintenance, safety equipment, etc. Second, it is asserted that the low cost Flags of Convenience ships deprive U. S. seamen of job opportunities.

The unions appear to be abandoning the first assertion, or at least emphasizing it less as time goes by. The reason for this is not hard to find, for the actual facts of the matter can be proved by physical inspection of the ships in question. Elimination of the older ships due to lack of competitive capability and to enforcement of responsible maritime policies by the PANLIBHON countries has raised the standards of their fleets to the point where they compare favorably with any in the world. Honduras registry is small, being principally United Fruit Co. ships whose material condition and working standards are not seriously challenged. The Chairmen of Lloyd's Register of Shipping and of the American Bureau of Shipping, after noting assertions concerning lower standards of large registries of Panama and Liberia, take pains to refute the assertions in some detail. Their conclusions may be summarized by this statement of the Chairman of the American Bureau of Shipping, made at the Annual Meeting of the Board of Managers in January 1959:

"From the standpoint of original design, maintenance and safety, the ships of these fleets compare most favorably with the fleets of any of the other maritime nations in which the Bureau has active participation."

With regard to the second assertion, that American-owned Flags

of Convenience ships deprive U. S. seamen of job opportunities, the facts also rebut the U. S. union's position.

It is true that the U. S. Merchant Marine is not in good economic health and employment of ships and men in our merchant fleet has dwindled to less than a third of what it was at the end of World War II (158,860 U. S. nationals employed in 1945; 49,281 in 1960). To attribute this decline to the American-owned Flags of Convenience ships is to ignore the basic economic facts which exist in the international merchant marine picture. There has been a great resurgence of the merchant marine fleets of the traditional maritime powers since World War II. They have been able to gain more and more business and to grow, while the U. S. fleet has continued to lose business and to decline, because all foreign fixed and operating costs are much lower than those of the United States flag owners.

Today it costs more than twice as much to build a ship in U. S. yards than in foreign yards. Insurance costs are, therefore, higher for U. S. flag ships. U. S. flag ships are required, except in emergency, to be repaired in U. S. yards where higher labor costs mean higher repair costs. Provisioning costs for U. S. flag ships are higher than any other except the British. U. S. crew costs are tremendously higher than foreign crews, usually about three times the West European scale.

It is these tremendously higher relative costs of U. S. flag ships which have caused them to lose out in the shipping market. In the case of non-liner operations, it is not unusual for the entire charter price for a foreign ship to be less than the cost of a U. S. crew alone.

The following example is a case that is by no means unusual: In late 1961, costs bids were received by U. S. authorities for the transportation of 11,000 tons of rice from Louisiana to Indonesia. The *M. V. Salada*, a British-owned ship registered in Britain, submitted a bid of \$15 per ton for a total cost of \$165,000. The SS *Rainbow* submitted the lowest bid of any U. S. flag ship, \$33.75 per ton for a total cost of \$371,250. The total difference in rates available for this one voyage was \$206,250. In other words, the British ship could have carried two cargoes for less than the low U. S. flag bidder could carry one.

The American-owned Flags of Convenience ships compete with all other ships in the world for non-liner business. They receive no subsidies or assistance from the United States. Their costs are approximately the same as the average foreign costs. That they have no substantial cost advantage over foreign ships, if any at all, is conclusively shown by the fact that, on 1 January 1962, 12 per cent of the American-owned Flags of Convenience ships were laid up idle for lack of business.

If all of the Flags of Convenience ships owned by Americans were sunk tomorrow, the U. S. Merchant Marine would benefit only briefly,

if at all. Such ships constitute only 6 per cent of the total world-wide competition confronting U. S. flag ships, and it is simply absurd to conclude that it is this 6 per cent, not the remaining 94 per cent, which constitutes the rugged competition which depresses the economic activity of U. S. flag ships.

The fact of the matter is, however, these ships will not be sunk. If by some means U. S. owners are prevented from registering their ships under PANLIBHON flags, most of them contend that they will either transfer their ships' registry to West Europe or sell out. They could not expect to keep active if they register under the U. S. flag because of the prohibitive costs involved. That there is no adequate surplus of subsidies to take care of them if they could return to the U. S. flag is shown by the fact that, on 1 January 1962, 5 per cent of the U. S. flag ships were idle for lack of business.

Thus neither of the assertions made by the U. S. unions is borne out by the facts. Now it is appropriate to deal with the two principal assertions the U. S. unions make against the Defense Department for its adherence to the "effective control" concept.

The first assertion is that, inasmuch as the crews of the Flags of Convenience ships considered to be under "effective U. S. control" are virtually wholly foreign manned, they are especially subject to communist seizure or sabotage. The second is that the U. S. could get all the ships it needs for emergencies from the NATO shipping pool.

Most of the crews of the U. S.-owned Flags of Convenience ships are NATO nationals who have been well screened by ship owners. This is good normal business practice required to protect their large investments. Even so, it should be conceded that some of these ships may be seized or sabotaged by communists. The same could also happen to some U. S. flag ships but no one has suggested eliminating all of the U. S. flag ships because one or more may ultimately be seized or sabotaged. If the Flags of Convenience operation is dealt with as an existing fact, as defense planners must do, it can easily be seen that it is ridiculous to abandon all claim now to 420 ships merely because some of that number may ultimately not be available. Also it is necessary to remember that the Defense Department recognizes the Flags of Convenience operation as a necessary expedient and that it would prefer to have enough merchant ships under the U. S. flag, manned by U. S. citizens, to meet emergency needs. Such is not the case and, therefore, the Defense Department must depend on what availability exists in fact, even if unfortunately that situation is less than ideal.

In regard to the second assertion, that reliance might be put on NATO nations to assist in providing our emergency shipping needs, it has already been pointed out that a NATO war is only one of the many emergency situations which may arise and even in a NATO war

it is more probable that the total combined shipping requirements of NATO nations will exceed the total shipping capabilities available. Additionally, a delay of 60 to 90 days is to be expected before allocation can be fully effective.

Also the pooling arrangement did not anticipate having an excess of ships to give over to one of the members. On the contrary, it was an attempt to prepare for maximum utilization of limited combined shipping facilities. It may best be regarded as a solution to a large traffic problem. For example, a Dutch ship that happens to be opportunely located could be used to move a U. S. cargo from South Africa to the U. S. concurrently with the movement in an opportunely located U. S. flag ship of a Dutch cargo from South America to the Netherlands.

SUMMARY AND CONCLUSIONS

In summary, the following factors point up the necessity of including the Flags of Convenience shipping under effective U. S. control in our resources available to meet national security requirements:

1. The operation of the U. S. economy in peace and war is dependent upon the continued importation by sea of vast quantities of raw materials. Therefore, in addition to the military shipping requirements, our national security requirements must include the shipping requirements to support the civilian economy.

2. The ability to meet our anticipated military and civilian economy wartime needs must be insured to the maximum practicable degree in peacetime by the ready availability of active, privately owned merchant ships employed in gainful ocean commerce.

3. The most important segment of our shipping resources consists of the active private U. S. flag shipping and the Flags of Convenience shipping under effective U. S. control.

4. While the total number of these Flags of Convenience ships and the total deadweight tonnage contained therein is not as large as the total active U. S. flag fleet, the qualitative value of the Flags of Convenience shipping in tankers and ore carriers is quite superior to that of the active U. S. flag merchant fleet.

5. When the total United States ocean shipping resources are considered as being available, under the most optimistic assumptions and on a quantitative basis only, the United States still possesses a marginal capability to carry out the sea transportation tasks of a general war. In situations of emergency and from the point of view of purely military requirements, there is a significant shortage of merchant shipping to meet the initial United States needs.

6. The United States would not have the capability to carry out the sea transportation tasks in general war without drawing heavily on Flags of Convenience shipping under effective U. S. control. The

loss of control of this shipping would greatly aggravate existing emergency deficiencies.

7. The operation of ships by American owners under the Flags of Convenience continues to be a target of strong opposition by maritime labor groups. The owners contend that they cannot operate under American wage scales without Government subsidy and allege that attempts to organize their crews under U. S. labor laws would force them to transfer their ships to other foreign shipping interests. Such transfer could in no way be construed as providing additional employment for U. S. seamen.

8. The transfer of these ships to other foreign shipping interests would result in the removal of these ships from effective U. S. control, and their availability to the United States for use under emergency conditions could not be assured.

Under present maritime operating laws, the present fleet of Flags of Convenience shipping under effective U. S. control is essential to meet our national security requirements.

The dependence on this Flags of Convenience shipping is an expedient. It would be much more desirable to have adequate U. S. flag tonnage available. This ideal situation does not exist. Until enough U. S. tonnage is available, the United States must rely on these Flags of Convenience ships.

**ARE P.L. 83-664 AND P.L. 83-480 CONSISTENT
WITH THE MERCHANT MARINE ACT OF 1936?
HOW EFFECTIVE HAVE THEY BEEN IN SUP-
PORT OF MERCHANT MARINE POLICY?**

Dr. Arnold K. Henry

Before turning to a discussion of the assigned topic, I should like to express some convictions concerning the maritime industry of the United States. The economic law of comparative advantage is valid theory, and it identifies the United States as least likely to succeed in free competition among major maritime powers. Opponents of Government aid offer this fact as adequate proof to sustain the suggestion that aid should be withdrawn and the industry permitted to expire because profitable operation without subsidy is impossible now or in the foreseeable future. Standing alone, the argument is impregnable, but in this imperfect world, other considerations compel many justifiable departures from theory. Certainly it is reasonable to inquire of these critics if they would apply the same simple principle of evaluation to Federal subsidies of all kinds. For example, the net expenditures on subsidy and subsidy-like programs of the United States Government reached the sum of \$7,460 million in the fiscal year 1960, and approximated \$50 billion in the decade 1951-1960. Would critics question estimated subsidy and subsidy-like expenditures of 3 billion, 433 million dollars for aids and special services to agriculture in 1961, as one example from a long list of assistance programs now in effect and presumably in the public interest? It is unrealistic to either condemn or praise Federal subsidies as such. Where an element of subsidy is present "the program must be judged independently, taking into account the economic, social, and political conditions prevailing at the time." The source of the quotation, which is a report prepared for the Joint Economic Committee of the Congress in 1960, directs our attention to the fact that "subsidies have expanded to the point where few segments of our economy are completely unaffected by them."

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This brief comment is offered in support of a point of view, but it does not imply approval of all Government maritime policies nor does it condone extremes of chauvinism in those who would set neither an optimum size for the American Merchant Marine nor a limit to the expenditures necessary to maintain it. Two tests are applicable. Is national security involved and to what extent? Are economic perils inherent in complete dependence upon foreign flag ships for the carriage of our foreign trade in time of peace? If competent authority answers either question in the affirmative, the maritime industry should be recognized as indispensable in some degree and proper means evolved for the creation and maintenance of an adequate maritime capability.

Basic to a discussion of cargo preference legislation in whatever form is congressional desire to provide assistance to the American Merchant Marine. Such assistance may be justified on one or more of three suppositions. First, the facility created by subsidy, direct or indirect, will provide services for Government use. National defense may be so identified. Second, private capital may be lacking for investment in an essential enterprise offering little hope for adequate earnings in the short run but which, in the long run, will be self-supporting. Third, a large group of services of benefit to society are quite beyond the capability of private enterprise to sustain. Aid to the merchant marine of the United States is certainly related to the first of these and probably to the third.

Types of Government aid to the shipping industry throughout the world have been classified rather broadly as indirect and direct. The former would include such policies as reservation of coastwise trade, preferential railway rates, exemptions from import duties, tax reduction or exemption from taxation, and loans. Typical of direct subsidies are construction and navigation payments, the latter now referred to as operating subsidies.

At one time or another the United States has employed most of these aids. Beginning in 1845 and ending with the passage of the *Merchant Marine Act of 1936*, our nation followed intermittently a policy of dependence upon payments for the carriage of mail as the major source of aid. Carriers of the mails were given compensation greatly in excess of costs incurred, and in this fashion the passenger-carrying segment of the industry lived but did not prosper. The all-cargo vessel was ignored, and a modern consequence appeared in World War I when our participation depended largely upon the availability of ships of our allies. We need not dwell upon the nearness of defeat traceable to allied vessel shortage.

The attitude of the Congress during the period 1918 to 1936 is of interest. While mail payments were augmented by construction loans at favorable rates of interest, progress was limited. The *Merchant*

Marine Act of 1920, however, contained a new and broad declaration of policy, as follows: "That it is necessary for the national defense and for the proper growth of its foreign and domestic commerce that the United States shall have a merchant marine of the best equipped and most suitable types of vessels sufficient to carry the greater portion of its commerce and serve as a naval or military auxiliary in time of war or national emergency, ultimately to be owned and operated privately by citizens of the United States; and it is hereby declared to be the policy of the United States to do whatever may be necessary to develop and encourage the maintenance of such a merchant marine," The declaration could not be called equivocal and it was confirmed eight years later in the *Merchant Marine Act of 1928*. In the *Merchant Marine Act of 1936* the ill-advised phrase "the greater portion of its commerce" became "a substantial portion of the water-borne export and import foreign commerce" and, in addition, need for shipping service on all routes essential for maintaining the flow of such commerce at all times was recognized. This declaration remains substantially unchanged although slightly altered by the *Ship Sales Act of 1946*.

In support of the declared intent to foster the development and encourage the maintenance of such a merchant marine, the *Act of 1936* identified two basic obstacles in the way of the construction of ships in the United States and their successful operation under the American flag in the foreign trade. For the first time in the nation's history, a reasoned and defensible subsidy procedure replaced the illogical, sporadic, and unsuccessful mail contract method. Title V, as amended, permits the award of construction differential subsidy equal to the excess of the costs of building ships in the United States shipyards over the fair and reasonable estimates of costs of construction in foreign yards. Maximum subsidy awards may not exceed 55 per cent of the domestic cost and are available only to vessels constructed for use in the foreign commerce of the United States. Title VI recognizes the second major disadvantage and authorizes operating differential subsidy for vessels to be used in an essential service in the foreign commerce of the United States. Operating differential subsidies shall not exceed the excess of the fair and reasonable cost of insurance, maintenance, repairs not compensated by insurance, wages and subsistence of officers and crews, and any other items of expense in which the American operator is at a substantial disadvantage, over the estimated fair and reasonable cost of the same items if the vessels were operated under the registry of a foreign country whose vessels are substantial competitors. In the interest of brevity most of the details of Titles V and VI have been omitted and the basic parts have been paraphrased with the hope that the meaning of these titles remains. Additional aids of an indirect nature are included in the law but may be omitted from this discussion.

Before the *Act of 1936* was amended by the *Long Range Shipping Act of 1952*, construction differential aid was available only for vessels "to be used on a service, route, or line in the foreign commerce of the United States determined to be essential. . . ." This limitation excluded ships employed in the charter and bulk cargo trades. Thus sixteen years elapsed between enactment in 1936 and the liberalizing amendment of 1952 eliminating use on an essential trade route in foreign commerce as a prerequisite to the award of construction subsidies for ships in the above categories.

The essential trade route concept remains unchanged as a governing factor in the award of operating differential subsidies. This restriction indicated congressional preference for assistance to common carrier operations and presumably established the relative importance of liner versus other shipping services.

Two additional facts should be mentioned. The objective of the subsidy provisions of the *Act of 1936* is parity. Construction aid enables American owners to obtain ships at capital costs approximating those of foreign flag competitors. Operating aid equalizes expenditures for major items identified above. There is no guarantee against loss nor is any share of our water-borne export or import foreign commerce reserved for American flag ships under Titles V and VI.

From time to time since 1936 the traditional maritime nations of Europe have expressed anxiety regarding the extent to which the United States is prepared to subsidize its merchant marine. It is obvious to those countries that, without aid, American flag vessels would be virtually excluded from participation in international carriage and the redistribution of transport revenue would be of great benefit to themselves. This anxiety changed to antagonism with the enactment of the *Cargo Preference Act* or 50-50 law as an amendment to the *Act of 1936*. Tolerance of the direct subsidy program already mentioned was doubtless due to lessons learned in both world wars and to admission that the possibility of similar need at some time in the future could not be dismissed. The parity principle was generally accepted as sound and not likely to be responsible for the creation of excess world carrying capacity to the extent that might be expected if competitive cost factors were disregarded.

Unfortunately, the cargo preference amendment has been criticized at home and abroad. The law, which became a part of Section 901 of Title IX of the *Act of 1936*, provides generally as follows: "Whenever the United States shall procure, contract for, or otherwise obtain for its own account, or shall furnish to or for the account of any foreign nation without provision for reimbursement, any equipment, materials, or commodities, within or without the United States, or shall advance funds or credits or guarantee the convertibility of for-

eign currencies in connection with the furnishing of such equipment, materials, or commodities, the appropriate agency or agencies shall take such steps as may be necessary and practicable to assure that at least 50 per centum of the gross tonnage of such equipment, materials, or commodities (computed separately for dry bulk carriers, dry cargo liners, and tankers), which may be transported on ocean vessels shall be transported on privately owned United States flag commercial vessels, to the extent such are available at fair and reasonable rates for United States flag commercial vessels, in such manner as will insure a fair and reasonable participation of United States flag vessels in such cargoes by geographical areas." This provision of Section 901 may be waived whenever the Congress by concurrent resolution or otherwise, or the President, or the Secretary of Defense declares that an emergency exists justifying a temporary waiver and so notifies the appropriate agency or agencies.

Apparent in the law is an intent to provide aid of a new type for all segments of the American Merchant Marine operating in foreign trade, including the common carriers now receiving differential subsidies in the operation of about 300 vessels over routes declared to be essential. Implicit was the hope that a considerable share of the revenues derived from the carriage of restricted cargo would accrue to vessels operating in the bulk and charter trades not eligible for operating subsidy under Title VI.

Thus the law is novel in three respects. To the parity principle, which is the objective of construction and operation subsidies, there is added positive cargo preference, a method not suggested in the declarations of policy found in the *Acts of 1920, 1928, 1936, and 1946*. Also recognized by statutory provision for the first time is the need of the charter and bulk carrier for operating assistance. As already mentioned, ships in these categories were ineligible for direct subsidy of any kind before 1952 when construction aid became available.

Admittedly, it would be extremely difficult but perhaps possible to adapt Title VI aid to charter operation. Maritime history reveals no successful effort to do so. Ships so employed are not common carriers, do not operate over essential trade routes, and are generally dependent upon the carriage of a limited number of commodities moving in ship load quantities. Excluding vessel tonnage under ownership of integrated industry from the benefits of cargo preference would do little to solve the problem of tramp owners because the dry cargo charter trade is intensely competitive in any circumstance, with rates of hire determined in the world market rather than by the limited and rather fixed competition to be found in common carrier operation over essential trade routes where the conference method of rate-making is prevalent.

The *Cargo Preference Act* is temporary in nature because it rests

upon continuation of United States foreign aid, and value to the maritime industry will vary directly with the volume of such cargo.

Preference policy of any type has been attacked and defended at great length and with great vigor. Outside the United States, European maritime nations have presented a united front in opposition. There was no element of surprise in their position. Unlike the direct subsidy provisions of the *Act of 1936* aimed toward cost parity, cargo preference sequesters greater or lesser amounts of cargo tonnage and effectively removes those amounts from international competition. To the extent that such tonnage might be carried in foreign flag ships, freight revenues are lost to European carriers. They refer to preference of this kind as unjustly discriminatory and productive of imitative policies, particularly among smaller nations in which excessive nationalism obscures other considerations. If carried to the unlikely extreme of a 50 per cent reservation of all cargo by an appreciable number of nations, such a policy could lead to unavoidable world-wide retaliation which at its zenith would limit each nation to the equivalent of one-way cargo carriage and thus create a vast surplus carrying capacity and consequent increases in total costs of carriage. The United States and other major maritime nations have worked together consistently toward elimination of discriminatory practices, of which there have been many examples. Among them are those resulting from the application of laws and decrees pertaining to currency controls, consular fees, pilotage, berthing of vessels, and preferential cargo routing.

Defenders of cargo preference in the United States include the labor, management, and shipbuilding segments of the maritime industry and some divisions of Government. Opposed, in some degree, are the Department of Agriculture, the International Cooperation Administration, the Department of State, the American Farm Bureau Federation, and the National Council of Farmer Cooperatives. Division of opinion of this magnitude identifies the legislation as controversial in the broadest sense.

Some measure of the importance of the problem is available in statistics pertaining to American flag participation in the carriage of export and import cargoes. Since World War II, the percentage of water-borne foreign commerce carried by vessels of United States registry has decreased to a discouraging low approaching that of 1914. In 1960 foreign flag vessels carried approximately 89 per cent of our total water-borne import and export cargo tonnage. The remaining 11 per cent can scarcely be called a substantial portion but the figure requires explanation. American flag ships obtained 32.4 per cent of dry cargo liner tonnage and only 7.2 and 5.4 per cent respectively of other dry cargo and tanker traffic. The greatest maritime weakness is, therefore, largely in the charter and bulk carrying trades.

The meager percentage of tanker traffic carried in American flag ships does not disclose the fact that some millions of tons of vessel capacity have been constructed in foreign shipyards for the account of American individuals and corporations and registered under foreign flags, mainly those of Liberia and Panama. A large share of the enormous cargo tonnages created by increased imports of iron ore, petroleum, petroleum products, and bauxite is thus carried in American-owned vessels. Serious intergovernmental and labor problems have arisen from this practice but it is mentioned here only to emphasize the inability of the bulk carrier to remain competitive under the American flag without aid not now available. Evidence of tanker disadvantage is disclosed by reference to the fact that, as of January 1962, American owners of tank ships registered under our flag employed only one-seventh of that tonnage in foreign trade, the remainder being operated in coastal, intercoastal, and noncontiguous trades from which foreign flags are excluded under cabotage restrictions.

What share of American flag carriage has been contributed by cargo preference? Excluding defense cargo and estimated Export-Import Bank movements, all aid cargoes were less than 6 per cent of total export-import tonnage in 1960. Of this percentage, cargo preference obtained for American vessels was 53.6 per cent, or less than 3.5 per cent of the total.

This share has been referred to by some as too small to justify foreign criticism. To tramp shipowners, however, it has been declared to mean the difference between survival and extinction. Two facts would seem to support this apprehension. The tramp fleet is small in number and it must operate in the intensely competitive climate characteristic of the charter trade. Commodities in the government aid programs identify them more closely with carriage in charter-type vessels. Proof of this is found in the greater than two-to-one relationship of tramp to liner total tonnage under P.L. 83-664 in 1960. Additionally, aid cargo carried in liner vessels is supplementary to general cargo, whereas for the tramp there is little opportunity to carry multiple shipments on one voyage.

The importance of preference cargo to the liners and tramps appears in the estimates for 1960. Excluding movements initiated by Export-Import Bank loans, cargo originated by aid programs provided 22 per cent of total U.S. flag liner dry cargo export and 90 per cent of dry cargo export not carried in line vessels. Thus, while aid cargo is a small share of total import and export tonnage, it is significant indeed as a percentage of the total carried by American vessels.

Despite a clear declaration of policy by the Congress and almost endless investigations at government level, the objectives of the decla-

ration have not been attained. Some notable deficiencies are recognizable.

1. Vessel replacement has fallen below a level necessary to avoid the problems of block obsolescence and excessive average age of ships of the active fleet, which is also lacking in balance.

2. All but a small fraction of bulk commodities in foreign commerce move in foreign flag ships.

3. The importance of the tramp and the bulk carrier has not been given statutory recognition. Each is eligible for construction aid but the law leaves to administrative authority the discretionary division of construction subsidy appropriations among liner, tramp, and bulk carriers.

4. Cargo preference legislation creates a questionable mixture of direct and indirect aid that runs contrary to the principle of parity, which has been more or less invulnerable to criticism if subsidy of any type is assumed to be in the national interest.

For the tramp element of the industry, the benefits of cargo preference are exaggerated. Vessel replacement appears to be beyond possibility even under existing conditions. The future is not encouraging because aid cargo alone has not been sufficient to employ profitably the number of ships engaged. More disturbing are the temporary aspects of cargo preference and the unknown quantity of foreign aid which, we must hope, will decline steadily as the economies of recipient nations improve. Without long-run continuity or short-run cargo volume predictability, the policy offers little encouragement as a lasting and logical basis for aid to a faltering merchant marine.

The Department of Commerce, admitting the existence of opposition to cargo preference laws in many foreign countries, states on the one hand that "without cargo preference, U.S. flag tramp ships would be put out of business and American liners would lose a substantial share of their business . . .", and on the other hand points to the fact that foreign vessels "have the opportunity to compete freely for approximately 97 per cent of our dry cargo exports and imports." These two statements both depreciate and emphasize the importance of cargo preference. Mentioned also by that Department is the existence of various types of discrimination practiced by many other countries. Does this suggest that justifiable discrimination may be found in cargo preference? The economic definition of comparative advantage can be offered as a basis for criticism of direct subsidies or cargo preference, but the former method faces squarely the disadvantages to be overcome and is less provocative of retaliatory actions by other nations which may further complicate matters by removing from competition, in one manner or another, an increasing amount of transport service in international trade. Whether cargo carriage

is restricted by bilateral agreements or by unilateral action, the ultimate effect is the same.

The need for the services of American flag tramp ships has not been defined. If such carriers are essential within the declared objectives of the *Act of 1936*, is it not advisable to so identify them and attempt to develop for their preservation an acceptable long-range plan related to cost disadvantage as has been done for the liner segment? If, on the contrary, need for these ships is questionable and national policy may be achieved without them, can merit be found in a plan that at best gives indirect and insufficient aid for an indefinite period of time to vessels that are not essential?

The maritime image has been poorly drawn for the American people. Criticism makes good copy and in this connection some shortcomings in the area of public relations must be acknowledged by the industry. Much more unfortunate, however, is the failure of Government to implement existing policy. If the objectives of that policy are sound, we should persevere in an effort to attain them. This is an obligation of the Congress until policy is changed.

To some advocates of a strong merchant marine, the existence of cargo preference points to past failures to determine the size and composition of the fleet and the services it is expected to provide.

COLLECTIVE BARGAINING IN THE MARITIME INDUSTRY

Charles H. Logan

No purpose could be served at this time by going into detail on the complex and disturbing factors in the maritime labor picture. Let us start with the present, and try to see what might be done about the future.

Just a word about the past. As we look at it, we see a strange relationship in the patterns that have been woven by industry and labor. Because of a lack of coördination by industry and labor a comedy of errors has developed which has created a situation that threatens both. The tragedy is that, even at this stage, many in industry and labor who are awake to the problems besetting them still try to blame each other's philosophy or lack thereof for the existence of danger.

Stripped of superfluous language, the issue today is the survival of the American Merchant Marine as we know it. Unless we can come to a realization that the question can be met only through the best efforts of industry and labor, the issue will be lost.

THE ROLE OF INDUSTRY

What about industry? It is time for industry to stop playing games and come alive to the truth that the labor situation must be treated as something that is constant, something that must be lived with daily, just as all the other elements that affect success or failure directly. Perhaps most important is the need for industry to recognize and acknowledge that, to understand and to analyze its own problems and aims intelligently, it must also make every reasonable attempt to do the same with problems and goals of the unions.

Through the years we have been impressed with what appears to us to be the total inability of spokesmen for the steamship operators to approach union representatives for discussions of mutual difficulties. Just about every problem is an issue that involves both industry and labor, if one has a basic understanding of the truth about unionism. More simply, in discussing his situation with the labor representative,

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the operator must appreciate that his labor colleague has pressing problems himself. In the final analysis, neither one nor the other can give what is beyond his reach. By the same token, when one provides an opportunity for the other, he also helps himself. Such mutual assistance should be expected; it should also be demanded.

This concept, however, has never been adopted by the maritime industry. Unless and until it is accepted, there never will be that relationship of collective bargaining which must prevail if employers and employees, wedded by the terms of a labor contract, are to survive.

THE ROLE OF LABOR

What about labor? If it wishes, labor can be the pot that calls the kettle black. It has no more appropriate role. Labor has little to be proud of and much cause to examine its conscience to reevaluate what is good and bad for its people. As we see it, labor might even be accused of having taken advantage of a cripple many times in recent years. In every sense of the word, the maritime industry has been a cripple. Because it stands so vulnerable in the face of attack by foreign flags, it has been an open target for labor.

So much for criticism which, we must remember, does not help us toward the objective which we cannot forget is progress. At this point, we can see that the task ahead challenges analysis or, on the other hand, we can accept it as a very simple one. Let us begin with a simple view.

The operators must resolve that they will, through competent spokesmen, go before union representatives with whom they have contracts and discuss the problems of the industry. They should make constructive suggestions for the advancement and the benefit of all. Even where there is little hope of progress, the task of averting or minimizing losses must be planned. The operators must consider openly those issues which they believe are of interest to all. They must participate in these talks in a way that will command respect. Of utmost importance, spokesmen for the operators must understand and evince honest concern for the difficulties facing the union representatives.

COOPERATION IS ESSENTIAL

The big thing is for all to work together on common problems toward a common aim. This is basic. It is not necessary that everyone be in agreement all the time. It is essential, however, that where there is disagreement, it must have honorable roots so that they can be exposed to close scrutiny. Such an outlook does not advocate the submergence of ideals, integrity, or the support of fundamental

policies. One must recognize, we repeat, that to receive, one has an obligation to give. It is that elementary.

As for labor, there must be leaders who have an appreciation of the need to do a good job in what is called labor relations. In recent years, there has arisen the Maritime Trades Department within the American Federation of Labor and Congress of Industrial Organizations. This unit takes its place alongside the Metal Trades, the Printing Trades, the Building Trades, and others. In the Maritime Department one finds 32 international unions engaged in the maritime industry, either offshore or "shoreside." We concern ourselves here with the offshore unions who have the greatest stake in this situation. They were largely responsible for the organization and the support of the Maritime Trades Department.

Any union engaged in the maritime industry is a member of this department with such exceptions as the International Longshoremen's and Warehousemen's Union of Harry Bridges, the International Brotherhood of Teamsters of James Hoffa, the National Maritime Union of Joe Curran, and the American Radio Association. The president of the Maritime Trades Department is Paul Hall, who also heads the Seafarers International Union and is national vice president of the AFL-CIO. The department establishes policy and works for the protection of jobs. It assists the industry which provides these jobs for members of affiliated unions. The department has never been so active and progressive as it is now.

So there you have it. It would seem to me that you have a natural avenue of approach to real collective bargaining for what may be the first time in the history of the industry. The time for the operators and for union representatives to get together is now. This getting together is going to take a series of steps in the right direction. Let us be candid. Prejudice and selfishness must go. Only then can each ask complete performance from the other.

A PROPOSAL FOR THE ACHIEVEMENT OF COOPERATION

What are these steps? First, a committee composed of operators should be set up. It would accept the proposition that the man who works is entitled to his fair share of dignity. This committee should ask for a conference with a similar body representing the maritime unions, a request that would be addressed to the president of maritime trades.

Conferences should begin with the awareness of identifiable problems and what causes them. This would be followed by a consideration of measures to eliminate these matters. In the maritime field today, there has never existed the relationship that one finds among the principal unions. A more opportune moment for constructive discussion has not existed nor has there been a time when industry

needed such a program and an occasion when labor was more receptive. Before concluding, one must make a further observation or, perhaps, a warning.

If there is to be a move toward consolidation of effort and a uniformity of purpose vis-à-vis the trade unions, such an approach must be taken in the fullest sincerity. Operators must be prepared to analyze issues in an atmosphere in which union representatives feel at home, in which they can speak freely and can have some expectancy of being understood. I call this a warning because if bad faith upsets the program, the end could be disastrous. Some operators may hold this to be academic, or contrary to hard facts. It is they who do not know these hard facts which can be taught the uneasy way.

Likewise, there are certain unions who will be unhappy with the idea of a well-regulated program. They can also be taught the facts the uneasy way.

PROBLEMS OF FINANCING VESSEL REPLACEMENT

Robert S. Hope

INTRODUCTION

The problems of replacing vessels in the American flag merchant marine are as broad and varied as all of the problems facing United States shipowners today. Hence, any discussion or analysis of these problems requires consideration of the entire situation. Necessarily, this means repetition in this presentation of some of the problems already referred to, or to be referred to, in this symposium.

To commence this discussion in its proper perspective, we must state several basic premises:

1. It costs roughly twice as much to build and operate U. S. flag ships as it does to construct and operate foreign flag ships.

2. Our national policy since World War I has been to directly subsidize operators and the construction of their vessels and to offer other aids and incentives such as protection in the domestic trades and a right to at least 50 per cent of Government-financed cargoes, to other shipowners.

3. In addition to the benefits of a merchant marine to our commerce, there is a clearly recognized national defense requirement for a merchant marine auxiliary ready for immediate mobilization.

4. Because American shipping cannot compete nor survive without assistance, its capital replacement program cannot stand on its own nor be dealt with as other industries.

This final premise is probably the most significant, and everything that is said today must be considered in light of this fact, which in a sense is a summary of all the problems involved in vessel financing. For instance, if Humble Oil Company desires to build a new refinery or the Ford Motor Company needs a new plant or General Dynamics commences a new research program, it is a reasonably routine matter for their representatives—and not necessarily top executives—to meet with the banking institutions with whom the companies normally do business and wrap up the complete transaction in a matter of

days. The loan may not require security beyond the general credit of the company, and there need not necessarily be a mortgage or the issuance of debentures tied to the particular project. In some instances, the money required may be merely withdrawn from an open line of credit, requiring only an exchange of letters. Usually there will be some security instrument, but this is frosting on the cake. Certainly there would be no detailed study of the mysterious area, "economic feasibility," which presents so many difficulties in ship financing. Neither would there be insistence for and reliance upon a Government guarantee, nor would outright and burdensome restrictions be placed upon the particular project or the day-to-day operation of the business.

On the other hand, in the financing of the replacement programs of each of the several segments of our fleet, as we will discuss later, there are the following common obstacles, in addition to the particular ones facing each owner.

1. All lenders demand that the specific project for which funds are sought stand on its own. This requires a study confirming economic feasibility by one of the many independent firms of consulting economists. Such studies are not inexpensive and require considerable time.¹⁰

2. Lenders on ships demand full security or collateral plus. This means that, not only must each ship be subject to a first preferred mortgage, but there must be either a Government guarantee or a "solid gold" charter, *i.e.*, a contract, in the case of a tanker, with a major oil company or other comparable industrial company. It must be noted that even a Government guarantee does not eliminate the economic study, because it is a condition precedent to Government insurance.

Because of the variety of the particular problems of each of the several segments of the American Merchant Marine, I have divided this presentation according to the types of vessels and the services of the owners.

SUBSIDIZED LINES

As they represent by far the largest segment of the merchant marine and because their problems are more clear-cut and not as extensive, we will first examine the situation of the subsidized lines with respect to the financing of their replacement programs. Again, some background information is essential.

Cost and Terms of Purchase of Prereplacement Program Vessels. Until the vessel replacement program commenced in 1957-58, the

¹⁰ These studies are not required ship-by-ship in large fleet replacement, but may be on a fleet basis or a group of ships.

subsidized companies operating regular liner services on essential trade routes¹¹ utilized vessels designed and built either shortly before or during World War II, with the exception of the *Mariner*-type vessels built beginning in 1952. The war-built vessels used, and in some cases still being used, in subsidized services are of the *C-1*, *C-2*, *C-3*, and *Victory* ship classes. It is interesting to note the following prices, set pursuant to the *Merchant Ship Sales Act of 1946*, which represented the range of the cost of these vessels to their owners:

| Class ¹² | Unadjusted Statutory | |
|---------------------|----------------------|-------------|
| | Sales Price | Floor Price |
| C-1 | \$ 970,000 | \$ 912,859 |
| C-2 | 1,050,000 | 957,818 |
| C-3 | 1,230,000 | 1,280,730 |
| Victory-AP3 | 1,065,000 | 1,005,431 |

These vessels are sold for cash or on terms. Generally speaking, it is fair to say that most were purchased on terms, which provided for a 25 per cent down payment, 3½ per cent interest, and a maturity twenty years from the date of delivery from the shipyard.

Cost of Replacement Vessels and Sources of Funds. On the other hand, the net costs to the subsidized owner of vessels which are being used to replace the war-built fleet range from around \$4,700,000 for the first *Mariners* up to about \$7,500,000 for the most recent ships for which contracts have been awarded. Bear in mind that these figures represent something less than one-half the actual construction cost of the new vessels because of the construction differ-

¹¹ The determination of essential trade routes is made by the Maritime Administrator under Sec. 211(a) of the *1936 Act*, which reads as follows:

Sec. 211. The Commission is authorized and directed to investigate, determine, and keep current records of—

(a) The ocean services, routes, and lines from ports in the United States, or in a Territory, district, or possession thereof, to foreign markets, which are, or may be, determined by the Commission to be essential for the promotion, development, expansion, and maintenance of the foreign commerce of the United States, and in reaching its determination the Commission shall consider and give due weight to the cost of maintaining each of such steamship lines, the probability that any such line cannot be maintained except at a heavy loss disproportionate to the benefit accruing to foreign trade, the number of sailings and types of vessels that should be employed in such lines, and any other facts and conditions that a prudent businessman would consider when dealing with his own business, with the added consideration, however, of the intangible benefit the maintenance of any such line may afford to the foreign commerce of the United States and to the national defense.

¹² These are the standard designs and it is not necessary for this illustration to give prices for special designs.

ential subsidy. This tremendous increase in capital investment creates the first problem of financing, as the owner company is required to pay cash of at least 25 per cent of the cost to it.

Equity Funds. The first source from which the down payment is drawn is the Capital Reserve Fund which each subsidized operator is by statute and contract committed to maintain. Into this fund there must be deposited each year an amount equal to the straight-line depreciation on each subsidized vessel plus the proceeds from the disposition of any such vessels. Secondly, to meet its down payment, the subsidized owner may trade in to the Maritime Administration the obsolete vessels and receive credit for a valuation determined by the Administration. These funds are then paid directly to the shipyard by the Government. Or the owner company may choose to sell its old vessels on the open market. Finally, if these two sources do not provide sufficient funds to make up the down payment, the owner company must look to private sources or draw from its general funds.

At this point the owner faces the competitive problems of the money market. Additional shares of existing classes of stock may be sold, a new class of equity may be authorized, or the loan of funds on an unsecured or subordinated basis may be sought. Any of these avenues present formidable problems. The salability of stock is directly related to the earnings and growth potential of the company. As you know, the funds of subsidized lines which may ultimately be freed for distribution to shareholders are restricted by law and contract to protect the Government's right to recapture subsidy. Until recently, the greater portion of the investing public had no knowledge of the steamship industry, and because of their reluctance to deal with "regulated" industries, all but the knowledgeable—or, as referred to in the money market, the "sophisticated"—investors shied away. The truth of the matter is that subsidized steamship securities represent some growth potential and reasonable return over the long range, but they cannot compete with the large industrials or utilities for earnings or with the electronics, etc., for speculation. A list of typical subsidized companies, showing some of the information significant to investors, may be found on page 111.

Unsecured Borrowings. Borrowing on an unsecured or subordinated basis requires considerable negotiation and depends almost entirely upon the general credit reputation of the borrower. Naturally, such loans command much higher interest rates which increase in direct proportion to the lack of collateral. Lenders are extremely unimpressed with second mortgages on vessels because of the rather sharp fluctuations in market values.

Finally, stock sale or loans are inhibited to some extent by covenants in both the subsidy contracts and the first mortgage loans. Of these, the more important restrictions are:

1. The requirement to maintain working capital in sufficient cash or liquid assets to assure day-to-day operation of the company and its vessels.

2. The need to assure secured creditors of their preference.

3. Prevention of over-borrowing or liens on assets beyond their intrinsic value.

4. The necessity of establishing sinking funds sufficient to pay off secured loans, and similar safeguards.

Needless to say, there are numerous other provisions, such as restrictions on salaries and dividends, dealings with affiliates, etc., which make it impossible to dissipate or channel off funds.

Mortgage Financing. The financing of the 75 per cent balance of the cost of the new vessels presents relatively fewer complications. These funds, except where the owner has a large Capital Reserve Fund, are obtained by borrowing, on a first preferred mortgage basis, from institutions such as savings banks, insurance companies, pension funds, and other long-term lenders. These loans may be evidenced by notes or the obligations may take the form of bonds. In either event, the obligations are fully insured by the United States under the provisions of Title XI of the *Merchant Marine Act, 1936*, as amended. This guarantee has proved very effective and the insured bonds have been given the highest rating, AAA-1, and are regarded as being virtually as secure as Government bonds or other Treasury issues.

The subsidized lines, unlike some unsubsidized operators, have experienced no difficulty in obtaining mortgage insurance commitments from the Maritime Administration. This is because, under the subsidy contracts, the owner's obligation to build replacement vessels is conditioned upon a finding of economic feasibility. Hence, the companies do not contract to built new vessels until this finding is made. Having made the finding under the subsidy contract, the Administration is bound to approve the mortgage insurance request.

However, it should not be assumed that this method of mortgage financing is as satisfactory as the direct Government mortgage. As mentioned above, the mortgages held by the United States on the war-built vessels and the *Mariners* commanded an interest rate of only 3½ per cent, as opposed to 5 per cent plus the mortgage insurance premium to the Government of ½ of 1 per cent, making a total rate of 2 per cent higher than the direct mortgages. Because of national policy, commencing in 1952, of bringing private institutions into the picture and the desire of both of the most recent administrations to reduce Government obligations, there is little likelihood of reversion to direct financing. The statutory authority is there, but not the appropriations.

The subsidized lines do have problems with financing of vessel

replacement. However, as may be seen from this discussion, these problems are completely met by the security and assurances given by the Government in the form of operating and construction subsidies and Title XI mortgage insurance. Through the combination of all of these aids, investors and lenders, whether secured or unsecured, have more safety than do most American industries.

NONSUBSIDIZED OPERATORS

Again for purposes of clarity in understanding the problems of financing, nonsubsidized companies are best divided into three categories: unsubsidized liner operators both foreign and domestic, tramp operators, and tanker owners.

LINER OPERATORS

Foreign Trade Berth Services. There are today only a few companies which still operate United States flag liner berth services in the foreign trades on an unsubsidized basis. In fact, virtually all of the shipping companies which operate such services, except industrial groups and their subsidiaries, have applications for subsidy pending before the Maritime Subsidy Board. There is a clear indication that those who have applications will, unless contracts are signed, be forced to abandon their services or operate under foreign flag. With respect to the steamship affiliates of large industrial groups such as Alcoa, there is little possibility of being able to replace their existing fleets and continue to operate under U. S. flag without some Government assistance. The basic reason for this conclusion is directly related to the problems of entering into and financing a program for replacement of the vessels involved in these services. Although, technically, vessels to be placed in unsubsidized liner services could qualify under the *Merchant Marine Act, 1936*, for construction subsidy, there is, as a practical matter, little likelihood of approval because of current national policy to conserve construction subsidy funds. In the case of the proprietary carriers, there is apparently a firm policy against the granting of construction aid, as recently the Secretary of Commerce denied the application of Bethlehem Steel for assistance in the construction of two large ore carriers. Significantly, Bethlehem has now decided to build these vessels in a German shipyard.

Assuming no Government subsidy aid, owners of vessels in the various berth services in our foreign trade face specific problems as follows:

Industrial Carriers. Obviously, Bethlehem, Alcoa, United Fruit Company, to mention only the more prominent, could raise money

for vessel replacement on their general credit, with mortgages on the vessels serving as direct security. Likewise, they probably would not be faced with any equity or unsecured money problems. In the past, as a practical matter, most industrial carrier vessels have been owned outright. To complete the picture, the vessels of such companies would be eligible for Government mortgage insurance under Title XI and would have no difficulty establishing economic feasibility. Also, short of new construction, such companies are eligible under the so-called *Vessel Exchange Act* (P. L. 86-575), Sec. 510(1) of the *Merchant Marine Act, 1936*, which was enacted by Congress in July 1960, to trade in their old vessels for war-built vessels in the Reserve Fleet which are of better quality and speed. The intent of Congress in the passage of this bill was to provide assistance and incentive to non-subsidized owners, including industrial carriers, and to up-grade their U. S. flag fleets. From the foregoing it is clear that the deterrent to improvement of the fleets of the proprietary vessel owners is not the financing of replacement vessels, as their resources and opportunities are vast. It is, rather, the basic economic problem of the high costs of continuing to operate under the American flag.

Independent Liner Companies. In the immediate post-World War II period, a number of companies resumed prewar liner services or established new ones on an unsubsidized basis. They developed into strong competitors with both foreign flag and U. S. flag subsidized liners. They had the advantage over the foreigners of having fast war-built vessels, acquired at relatively low costs and on favorable terms as outlined above; they had the advantage over the American subsidized lines of greater flexibility and freedom from subsidy contract restrictions in such areas as service, type of cargo, conference membership, etc. Beginning in the late 1940's, however, the situation stabilized and most of these liner operators became applicants for operating subsidy with the attached requirement of a subsidized replacement program, although several of them went to foreign flag operation. As indicated above, most of the subsidy applications have not been granted.

Without operating and construction subsidy aid, there is not the remotest possibility that any independent American flag liner operator can replace its fleet. It is true that the operators are eligible for Title XI mortgage insurance aid, but it is extremely doubtful that the Maritime Administration would be able to find economic feasibility for the unsubsidized liner services. Even if this could be done, there would remain the equity financing problem which, in today's money market, would be virtually impossible. Therefore, it must be concluded that the problems of financing a replacement program with respect to the vessels of the unsubsidized liners in the foreign trade render any such programs impossible. It goes without saying that

these operators would be faced with the same problems of high cost of operation mentioned above, which in themselves create the capital financing obstacles.

DOMESTIC BERTH SERVICES

Prior to World War II, vessels engaged in the domestic liner services of the United States made up a large part of our merchant marine. There were large fleets operating between the Atlantic and Pacific Coasts, on the Atlantic Gulf and Pacific Coasts, between continental United States, Puerto Rico, Hawaii, and Alaska, and in various other combinations of these services. The vessels in these trades were protected from both foreign flag and subsidized U. S. flag competition and were not seriously affected by competition from surface carriers. However, during the war, most of the domestic fleet was lost to enemy action. The owners were able to replace the vessels at the end of the war with *Ship Sales Act* vessels, enjoying the same prices and favorable terms as other U. S. flag operators. It appeared for a while that these services would fare better than the other unsubsidized segments of our fleet, but rising costs of handling cargo and operating the vessels, and the commencement of rate-cutting by the railroads in the case of the coastwise and intercoastal operators, proved this would not be the case.

The vessels in services between the United States and the offshore domestic areas also suffered from increased costs and unrealistic rate regulation. One by one, flags which had flown in these trades for almost a hundred years were furled and the vessels put to more profitable employment offshore. Today the only vessels operating in the intercoastal trade are those of industrial carriers or lumber companies which have given no indication of having any replacement plans. There are only one or two independent operators in coastwise trades who are attempting to survive and who may be successful through use of containerization and other facilities designed to reduce cargo handling costs. In the offshore domestic trades several operators have withdrawn; others indicate that they will soon do so; and, in several trades, towboats and barges have replaced vessels.

The future of this fleet points only to marginal earnings and a greatly reduced number of vessels. Construction of new vessels in these trades has been limited to one new company, which built small container ships that are now laid up, and two other companies which have made proposals from time to time for constructing container-type vessels. The only other improvements in the fleet have been by way of conversion of existing dry cargo vessels or tankers, two of which were done with Title XI mortgage insurance assistance and several others by utilizing new midsections built in foreign ship-

yards. For the latter projects, some private financing has been available. However, it is believed that such financing was made available more because of the general credit of the company than because of the security of the vessels. At times, there have been proposals of some form of direct Government assistance either by way of subsidizing rates or granting construction subsidy aid to these trades. However, to date, nothing has come of this.

It is clear that, except in the unusual cases where owners have been able to accumulate a general credit line, the obstacles to financing replacement vessels in these trades have proved a complete deterrent, not only to replacement, but in most cases even to continued operation. The vessel exchange program has proved of little value to these operators and, except in the few cases mentioned above, Title XI mortgage insurance has not been made available because of a failure to find economic feasibility. The Maritime Administration itself employed an independent economic organization to study the intercoastal trade. The report of this group concluded that there was room for only one operator in this trade, and upon the basis of this report the Administration determined that it would not find economic feasibility even for a program involving conversion of existing vessels which, of course, involved a capital cost much less than replacement. This resulted in withdrawal from the trade of the oldest intercoastal line.

From this discussion it must be concluded that, as a direct result of the financing problems and the economic situation which creates such obstacles, there is not and will not in the foreseeable future be any replacement in the domestic fleets.

DRY CARGO TRAMP VESSELS

As you know from your general knowledge and/or from other discussions which have taken place in this symposium, the American flag tramp fleet is made up of vessels which carry principally full shipload lots of bulk cargoes and follows the availability of such cargoes rather than operating in a regular berth service. Most of the vessels in the tramp fleet are the World War II-type *Liberty* vessels, although a number of *Victory*-type and some *C*-type vessels have been added to the fleets of the larger tramp shipowners. Because of the availability and relatively low *Ship Sales Act* prices, the U. S. flag tramp fleet reached large proportions immediately after World War II. It thrived upon the needs of the relief programs abroad and Defense Department requirements. These vessels, like all United States flag vessels, were given a preference by law in the carriage of not less than 50 per cent of the Government-sponsored cargoes.

Prior to the Korean War, the tramp operators faced several periods

of depressed rates, but following that conflict there was a steady decline in the tramp ship market and, consequently, in the number of vessels remaining in the fleet. Notwithstanding the good years that were experienced, it was impossible for the tramp shipowners to accumulate sufficient funds to build new vessels at the costs current in American shipyards, although the *1936 Act* was amended to enable such owners to qualify for construction subsidy aid. It became, as a practical matter, impossible for these owners either to obtain the Government funds or to finance their portion of such construction costs. Unless an owner was fortunate enough to obtain a long-term contract from a substantial charterer, which would more than meet the debt service requirements, no private lender would consider mortgage financing, much less equity financing.

When the Title XI mortgage insurance program was amended, tramp vessels became eligible for this assistance but, for the same reason that private lenders would not consider mortgage loans, it is impossible to expect the Government to make the necessary finding of economic feasibility for such aid. The *Vessel Exchange Act* afforded these owners an opportunity to up-grade or improve their fleets, and a number of them have been able to take advantage of it, but only after serious financing difficulties. Other owners have been able to improve their vessels by conversion, involving either jumboizing, which means making an existing vessel larger, or inserting completely new midsections or foresections in the existing vessels. The costs of such conversions are substantially less than new construction; nevertheless, only the owners who had some assurance of employment or an independent source of credit were able to obtain financing.

The situation with respect to this segment of the merchant marine continues to deteriorate, and the owners are now engaged in a fight for survival with their present vessels, without possibility of being able to enter into any replacement program. This is obviously a serious situation from a national policy standpoint as was shown in World War II, when tramp-type vessels were the most susceptible of mass production and comprised the bulk of the wartime merchant marine and proved essential to ultimate victory.

TANKERS

Most of the U. S. flag tanker fleet is engaged in domestic trades or in trades with the Caribbean Islands and the North Coast of South America. Tank vessels owned by major oil companies constitute the majority of the ships in this fleet. Needless to say, the oil companies encounter no difficulties in financing construction of new vessels. This is done on an outright cash basis or upon the basis of general credit

of the oil company rather than security of the vessel. Likewise, if an independent tanker owner is fortunate enough to obtain a charter from a major oil company, of sufficient duration and at a rate high enough to amortize the construction cost, he experiences no difficulty in financing nor does he require any Government assistance. Independent owners, however, who do not have an oil company charter or a charter from the Military Sea Transportation Service (MSTS) face the same general problems as do all other owners of the American flag vessels.

After World War II, the *T-2* type tankers constructed during the war, capable of carrying about 16,000 dwt. of cargo, were made available at a price between \$1,500,000 and \$2,000,000. These prices, like the prices for the dry cargo vessels, represented good bargains, and for a number of years tanker owners enjoyed good profits, but not sufficient to build up large capital reserves for replacement purposes. The Defense Department and the Maritime Administration expressed concern over the situation as these vessels became obsolete and required substantial repairs to renew their tanks.

During the Korean War and subsequently in the Suez crisis, it became apparent that defense requirements for petroleum products could not be met by the existing *T-2* fleet. A program of Government incentive was established which prompted the amendment of the Title XI mortgage insurance provisions of the *1936 Act*, a program by the Navy to charter vessels, and the granting of permission by the Administration for the transfer of *T-2* vessels to foreign ownership and registry to enhance their value and increase their earnings to enable the construction of new vessels under U. S. flag.

In the period 1956 through 1959, a number of contracts were entered into for the construction of supertankers. The equity capital required for the cost of such vessels was in most cases obtained from the foreign transfer of *T-2* vessels. The debt capital required was obtained principally through the use of Title XI mortgage insurance guarantees. In some cases these same vessels were chartered by MSTS, which gave additional security. However, it was only through the use of mortgage insurance that these vessels were constructed, as private lenders would not consider these loans without the Government guarantee or major oil company or MSTS charter. Because of the situation existing at the time, the Maritime Administration had no difficulty in making the finding of economic feasibility required for mortgage insurance. However, almost coincidentally with the delivery of the first of these supertankers, the tanker market declined critically and, except in cases where the owners obtained an MSTS or major oil company charter in the meantime, all of these vessels are in a serious financial situation.

The Defense Department, in reports issued almost every six months, continues to decry the serious shortage of American flag tankers. But there is today no possibility for independent owners to construct new tankers, even with Title XI insurance, which probably would not be granted because of the existing critical situation. Hence this segment of the U. S. flag merchant marine, together with all the unsubsidized vessels, faces curtailment and, except for the supertankers and vessels of the major oil companies, eventual extinction as a direct result of the impossibility of obtaining capital funds.

CONCLUSION

To summarize our discussions, I think you will agree with the statements made in the beginning that the financing problems of American shipowners are unique. This results from the fact that all American shipping is artificially supported, either by way of direct subsidy from the Government, indirect aids by way of protection in certain trades and preferences to certain cargoes, or by carrying the products of industrial parent companies. As indicated, the obstacles encountered in each of the several areas of financing are directly related to the economic disadvantages affecting U. S. flag ships, namely, increasing costs of operating vessels and handling cargo. With the exception of the subsidized lines and the industrial carriers, there would appear to be no possibility for any improvement in the general situation nor in the specific area of financing replacement vessels.

Finally, there is little that the American shipowners can do on their own to remedy or alleviate these problems. This is because most of the problems stem from economic factors beyond the control of American shipping companies. Certainly, it has been proved that the shipowners have no control over the continuing increases in wages and other operating costs. Likewise, they have no control over the increased costs in shipbuilding. The only area in which any success has been achieved is in the development of more efficient methods of handling cargo, such as palletizing and containerization. There are probably other areas where various degrees of automation can effect savings. However, obviously there may be new offsetting expenses, as any labor displaced by these improvements will expect to be compensated or placed in other jobs.

All in all, it is a very bleak picture, as all of the various groups engaged in our merchant marine and related activities recognize. Efforts are being made by the Government, by the companies, and even by the labor unions, but the most serious problems will remain unsolved.

Table 3. Financial Data for Certain
Subsidized Lines for 1961

| | <i>American Export Lines</i> | <i>Grace Line^a</i> | <i>Lykes Bros. SS Co.</i> | <i>United States Lines (est.)</i> |
|---|----------------------------------|-----------------------------------|-------------------------------|---------------------------------------|
| Net Earnings per Common Share | \$.80 ¹ | — ² | \$ 2.46 ⁴ | \$ 6.14 ⁵ |
| Dividends per Common Share | \$.25 ³ | — ² | \$.80 | \$ 2.00 plus 3% stock |
| Equity per Common Share | \$71.89 | — ² | \$53.99 | \$63.34 |
| Closing Price on New York Stock Exchange—4/10/62 | 18¾ | — ² | 18¼ | 39½ |

¹ On 1,230,000 common shares. Includes \$.17 from sale of obsolete equipment and before profit on trade-in of vessels of \$1.60 per share.

² Paid \$2.00 in each of 1958, 1959 and 1960.

³ Grace Line is a completely owned subsidiary of W. R. Grace & Co. 1961 figures are not available for the steamship operation, except that a profit was indicated. In 1960, Grace Line showed a deficit of approximately \$2.16 per share, the first deficit since 1932. No dividend was paid in 1960; in 1959, \$.50 per share was paid.

⁴ On 3,800,000 shares. Includes gain on trade-in of vessels of \$.38 per share.

⁵ On 1,746,864 shares. Includes gain on trade-in of vessels and insurance proceeds. Earnings from operations were approximately \$3.60 per share.

OPERATIONS RESEARCH AND SHIP DESIGN

Carl M. Fixman

Last year at this institute, the writer outlined the Maritime Administration's Directed Research Program. The Directed Research Program is aimed at solving known problems related to reducing the cost of operating U. S. merchant ships.

The Directed Research Program has been initiated. Emphasis has been placed on reducing the crew cost, estimated at about 25 per cent of the cost of operating a U. S. merchant ship, by the techniques of simplification, improved design, developing low maintenance machinery and automation.¹³ Cargo handling estimated at 30-60 per cent of the cost of operation is being researched, and improved ships and components are being developed.

The industry has responded with its own approaches to solving the high cost problems and the joint effort of industry and the Government should pay off when the new ideas are incorporated into the replacement vessel program.

There is a larger problem in the marine transportation service. The ships and facilities are part of a system. The system needs to be studied to determine what it is supposed to do. The problem then is the over-all systems problem. It cannot easily be defined. If it could be defined, it probably could be solved.

The system we are concerned with provides a service of moving things from one place to another over water. It consists of ships, terminals and facilities. It includes people who operate the hardware. It consists of *software* in the form of agreements, regulations, traditions and laws. It is influenced by environment and variations in the quantities and types of things it must handle.

It is not possible to generalize on the system problem, let alone particularize it to something that can be solved. According to who is describing the problem, we have too much capacity or not enough capacity; we should have faster ships or slower ships; we should have higher subsidies; we should be training more people or less people. In fact, some believe we cannot even be sure we have a problem.

Carl M. Fixman, Chief, Division of Ship Mechanization, Office of Research and Development, Federal Maritime Administration.

¹³ The Maritime Administration's studies of automation include careful consideration of its impact on the work force. The Administration's first effort in this area is underway and being accomplished by MCTC.

Obviously, it would be presumptuous to offer a solution to the system's problem at this time. This paper will, therefore, devote itself to partially describing a methodology which is being developed by the Maritime Administration to examine the various elements in the system in an attempt to provide those who are involved in its operation with the means for analyzing the problems presented.

The approach to the methodology is the operations research approach, and the remainder of the discussion will provide a brief description of the mathematical model technique which is a favorite tool of operations researchers.

Two mathematical models will be discussed. One of these is the maritime transportation system model, and the other is a mathematical model of the major component of the system, the ship.

THE BACKGROUND OF OPERATIONS RESEARCH

It is said that ever since the 3rd Century, B.C., when Hieron, King of Syracuse, asked Archimedes to devise means for breaking the naval siege of his city, political and military leaders have consulted scientists for solutions of problems of war. Historically, the first problem to receive the name Operations Research was concerned with how to set the time fuse of a bomb to be dropped from an aircraft on to a submarine. Professor Blackett solved this problem for the Royal Air Force by showing that the fuse should be set to explode on impact, and not after a period of delay. The real growth of operations research occurred during World War II, with the study of antiaircraft defenses by British scientists. This was followed in the U.S. during the war, in which the Air Force and the Navy used operations research in many fields.

Operations research as a science would be of little use if another development had not occurred. That was the development of the high-speed electronic computer. The first known computer was the abacus, which appeared in 3000 B.C. The abacus is still in use, and rivals the desk calculator in speed on simple problems.

In 1642, Pascal invented the adding machine. That is the ten-toothed wheel with carry-over features. The British astronomer, Babbage, described the analytic engine in 1812, but the state of the mechanical arts prevented its successful development.

The birth of the high-speed computer might be said to have started with the invention of the punch card by Hollerith of the Bureau of the Census. It was developed for use in the 1890 Census. Then, as you might expect, Hollerith went to IBM. In 1946, MIT developed the first electronic computer, and in 1950 the Bureau of Standards developed their machine. These two machines were used in working up ballistic tables, a type of operations research.

With a high-speed computer that could manipulate numbers in

microseconds, the operations research scientists could explore the mathematics of the problems of the military, management and the government.

The practical use of mathematical simulation in the maritime industry was started in late 1958 by Foster L. Weldon, Director of Research for the Matson Navigation Company. Mr. Weldon reported on his work in May 1959 (Ref. 7). The Matson Navigation model is in regular use, offering solutions to Matson's particular problems.

By implication we can credit Mr. Weldon with starting the Maritime Administration's work in mathematical simulation. Mr. Weldon was on the Advisory Panel for Future Requirements for Ocean Transport of the National Academy of Science's Maritime Research Advisory Committee (Ref. 6). This panel recommended that the Maritime Administration develop and manipulate models for predicting requirements for commercial cargo movements, numbers and types of vehicles and equipments, and for predicting the influence of technological advances on shipboard and longshore labor.

In August 1960, the Maritime Administration solicited for proposals to undertake a broad operations research study of merchant shipping. The Arthur D. Little-George G. Sharp proposal was selected, and a contract was awarded in January 1961. The contract consisted of three interrelated parts. The first part was a study of selected trade routes to provide characteristics for improved ships, and to provide inputs to the second part of the study. The second part of the study was to develop a mathematical simulation of the operation of merchant ships. The third part of the study was to analyze world-wide maritime and connected inland lengths and to apply the mathematical model.

OPERATIONS RESEARCH HELPS SOLVE SYSTEM PROBLEMS

Operations research provides a superior set of tools for fixing our system problems. Without the dynamic detailed analysis provided by the operations research mathematical simulation, one must use extrapolation from information obtained during a single short period, or one must use gross averaging techniques. For example, assume total water-borne commerce is 275×10^6 long tons per year and establish, for the sake of an example, that it is desired to carry 25 per cent of that commerce, or 68.8×10^6 long tons, in American ships. Checking through 1960 statistics, we find (all tons are millions of long tons):

| <i>Type of Cargo</i> | <i>Total Commerce</i> | <i>U.S. Lift</i> | <i>% U.S.</i> |
|----------------------|---------------------------|----------------------|-------------------|
| Break-bulk | 48 | 13.5 | 28 |
| Bulk | 117.8 | 12.7 | 11 |
| Liquid | 109.2 | 4.0 | 4 |
| TOTAL | 275.0 | 30.2 | 11 |

| | |
|--------------------------|-----------|
| 25% of the total lift is | 68.8 tons |
| Present U.S. lift | 30.2 tons |
| Additional U.S. lift | 38.6 tons |

Now another assumption is required; namely, that the ratio of break-bulk, bulk and liquid to the total will remain the same.

| | |
|----------------------------|---------------------------|
| For bulk—25% of total is | $117.8 \times .25 = 29.5$ |
| Present lift is | 12.7 |
| Additional lift desired | 16.8 |
| For liquid—25% of total is | $109.2 \times .25 = 27.3$ |
| Present lift is | 4.0 |
| Additional lift desired | 23.3 |

The additional lift desired is 40.1×10^6 T and differs from the 38.6×10^6 T gross shown in the table by the amount break-bulk U. S. lift exceeds 25 per cent. Since break-bulk lift already exceeds 25 per cent, let well enough alone and consider the bulk cargo only.

With information on the average length of voyage and the percentage full, the number of ships required can be deduced.

For example:

How many 25000 dwt.—16-knot ships are required when average voyage is 4,180 miles each way, or 8,360 miles?

$$\frac{8,360}{16 \times 24} = 21.8 \text{ days per voyage} \qquad \frac{\text{Distance}}{\text{Miles/hr} \times 24}$$

If working time is 340 days a year, this would be 15.6 voyages per year

$$\frac{16.8 \times 10^6}{25 \times 10^3 \times 15.6} = 43 \text{ ships required} \qquad \frac{\text{Lift Total}}{\text{Lift/ship} \times \text{No. of voyages}}$$

To show the possible error that might arise from such reasoning, assume the voyage is really only 4,000 miles.

$$\frac{8000}{16 \times 24} = 20.8 \text{ days, or 16.3 voyages per year}$$

Now

$$\frac{16.8 \times 10^6}{25 \times 10^3 \times 16.3} = 41 \text{ ships}$$

This quick check using gross statistics is very interesting, but management cannot be sure whether they need 41 or 43 ships. A shortage of ships might result in an inability for the system to supply a vital need. An excess of ships would be intolerable from the standpoint of the management of a private commercial enterprise.

Considering the other variables influencing the system, such as

seasonal variations in the cargo, the effect of weather on the schedule, the shifting patterns of foreign commerce, the long time growth of commerce, the variable costs of production factors and national emergencies make the gross statistical method of solving the problem cumbersome and inaccurate.

The operations research technique with its mathematical model can, by use of the high-speed simulation, look much more closely at the variables and offer management more select choices for decision making. The Matson Navigating Company model, for example, can look in detail at the operation of approximately 20 ships and 5 port complexes and simulate a full year of operation in about $11\frac{1}{2}$ hours of computer time. The Maritime Administration's model will be able to look at up to 75 ships and 20 port complexes with a time of simulation slightly longer than the Matson model.

THE MATHEMATICAL SIMULATION OF FLEET OPERATION

It would not be possible in the brief time available to completely describe the mathematical simulation being developed by the Maritime Administration. An attempt will, therefore, be made to show how the simulation will work using a single ship and a single port.

The mathematical model is a method of depicting a real life situation on a digital computer in order to check reaction to proposed changes or remissions to the real life situation in instances where it is too costly or impractical to physically implement such changes.

Figure 1 is the over-all simulation procedure. At the left-hand part of the illustration are shown the status, or record counters. The physical characteristics of the ship, such as her dimensions, her capacity to carry various types of cargo, i.e., containers, pallets, break-bulk, bulk and reefer, her speed, the amounts of various types of cargo in her and her daily cost of operation are shown.

For the port status unit, similar information is kept in the active memory of the computer.

At the middle of Fig. 1 are shown the types of manipulation of the status units that will be employed.

Ship's scheduling is developed analytically. It tells where and when the ship will arrive and depart from various ports.

Cargo generation is on a statistical basis. Cargo arrives at the terminal for the ship at irregular times and in irregular quantities. From detailed studies of actual operations, we have been able to determine that cargo arrives at the terminal in accordance with certain natural distribution laws. We then give the computer the mathematical formulation of these laws.

Cargo selection is a program for indicating that portion of the cargo selected for the particular ship. This logic program includes all of the rules about cargo preference, cabotage, etc.

Another logic unit outlines special port operations. Things such as waiting time, time from port entrance to berth, time from berth to port entrance outbound, draft limitations, etc., are included.

At the right-hand portion of Fig. 1, it is indicated that computations are made, manipulating the status units in accordance with the logic programs. The computations upgrade the status units and produce output records.

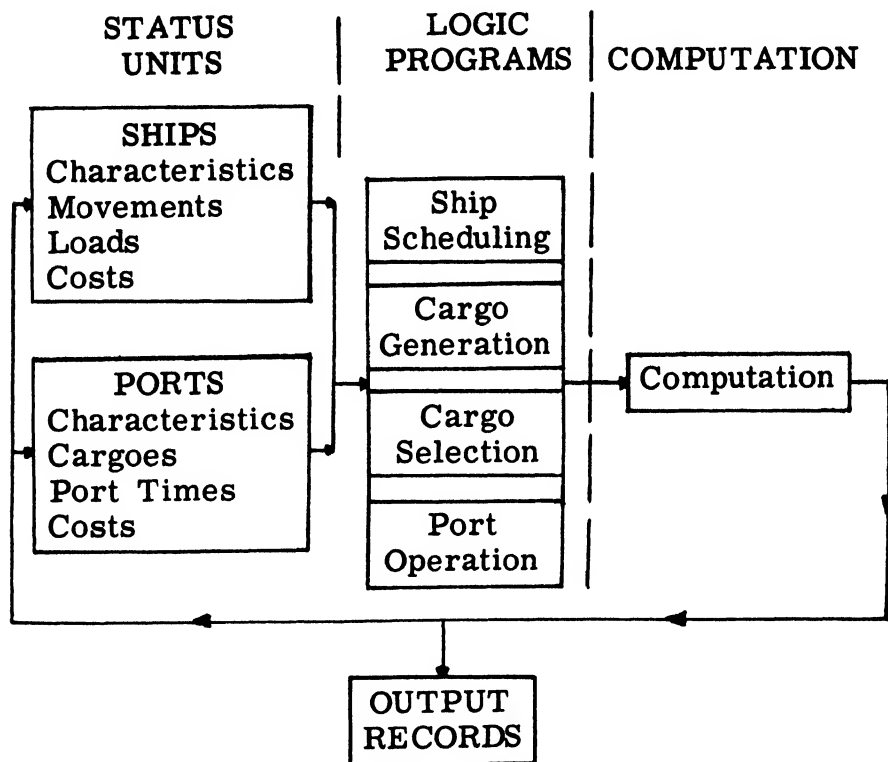


Fig. 1. Simulation procedure.

The output records would most likely be in the form of accounting information. Thus, cash flow documents and trial balance sheets would be produced. A management analysis of the accounting records would then show whether the simulated problem was the best answer.

Figures 2-6 show the operation of the simulation. On these figures a simplified problem of one ship and one port is illustrated.

The computer is controlled by a timing unit. The timing unit in, let us say, a microsecond can look at two hours of real time.

In Fig. 2, starting at period 99, an arbitrary start, the ship is at sea approaching port A. The port has 720 tons of cargo on hand for ship No. 1. The port has shipped 12,600 tons of cargo, and has received 7,300 tons to period 99. The last two numbers are required because the revenue associated with the system is derived from the port receipts and shipments.

Ship No. 1 is due to arrive in five periods. She has a capacity of

TIMING CONTROL ————— 99 **PERIOD**

CARGO GENERATOR ————— **Tons Become Available**

PORT STATUS—PORT A

| | | |
|------------------------|-------|------|
| Port Backlog | 720 | Tons |
| Port Shipments to Date | 12600 | Tons |
| Port Receipts to Date | 7300 | Tons |

SHIP STATUS—SHIP 1

| | | | | |
|-------------------------|------|------|---|---------|
| Event Time | ARR. | In | 5 | Periods |
| Ship Capacity—4600 Tons | | | | |
| Load for Port A | 900 | Tons | | |
| Load for Other Ports | 3650 | Tons | | |

PORT OPERATIONS

| | | |
|--------------------|--|---------|
| Unloading Time | | Periods |
| Cargo to be Loaded | | Tons |
| Loading Time | | Periods |
| Other Port Time | | Periods |
| Total Port Time | | Periods |

Fig. 2. Operation of simulation.

4,600 tons, of which 900 tons is for port A, 3,650 tons is for other ports, and therefore, she is 50 tons short of being fully loaded.

In Fig. 3, the timing unit flips over to period 100. Between period 99 and period 100, 160 tons of cargo have arrived at port A for ship No. 1. The port backlog is upgraded to 880 tons and the ship is due to arrive in four periods.

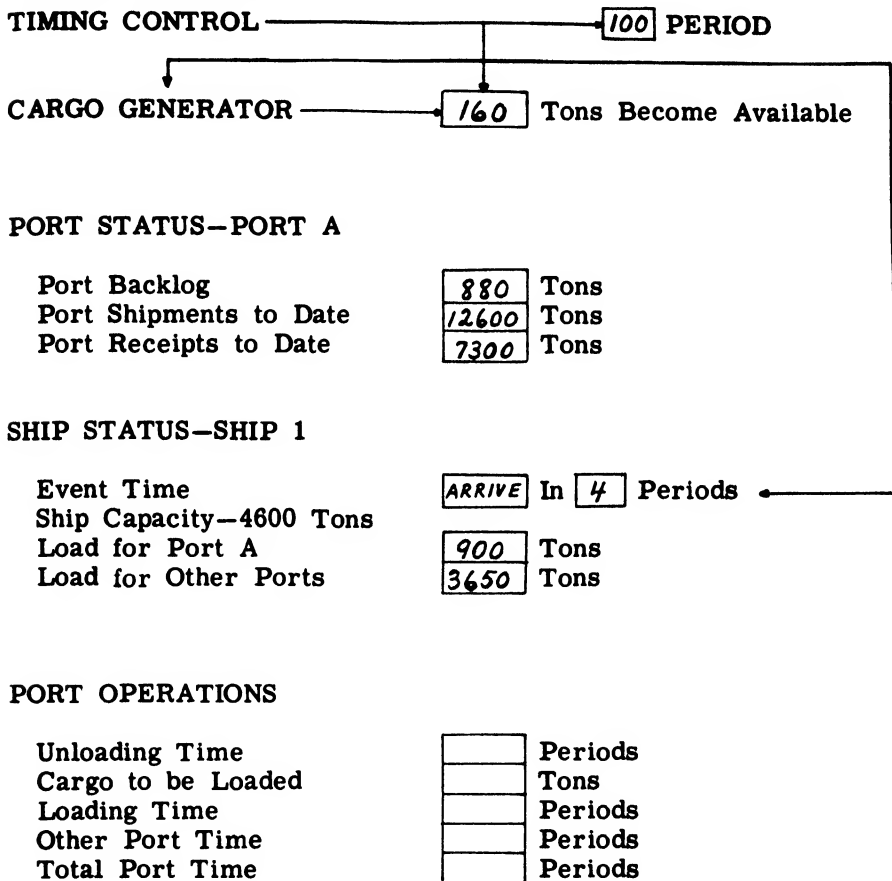


Fig. 3. Operation of simulation.

In Fig. 4, period 104 is shown. Two hundred and ninety tons of cargo have arrived in the port and the port status unit shows the port backlog at 1,170 tons. The ship is arriving.

In Fig. 5, looking further at period 104, the ship had 900 tons of cargo on board for port A. This cargo can be unloaded in two periods. Since the ship was 50 tons light on arrival and unloaded this 900 tons,

it has capacity for 950 tons to be loaded. This can also be done in two periods. There were 1,170 tons of cargo in the port for ship No. 1, and so 220 tons of cargo must be left behind. Three periods of arrival and departure time are necessary so that the total port time is 7 periods.

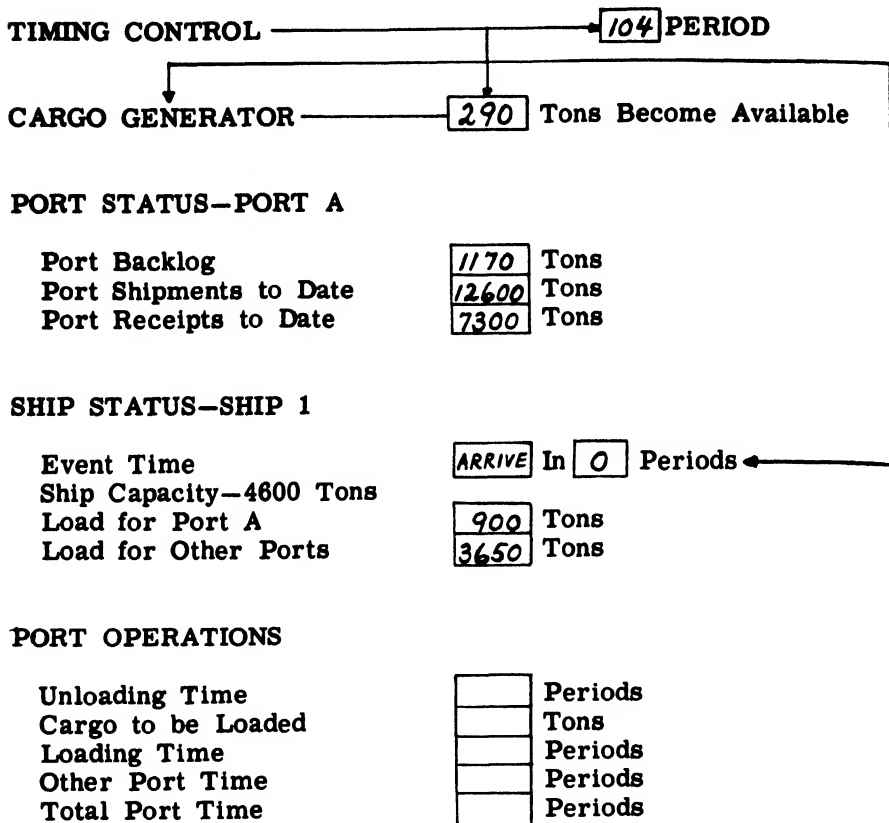


Fig. 4. Operation of simulation.

Now for a final look at period 104, as shown in Fig. 6. The ship is ready to depart. The port status unit has been upgraded and is ready for the next ship. The ship status unit has been upgraded showing her fully loaded and ready for the next port. The simulation has completed this operation.

This brief explanation of the simulation must now be multiplied by many ships, many ports and many types of cargo, and becomes the job for the high-speed computer.

To simulate the effect of changes in the fleet we need only to make up hypothetical ship status units and feed them into our operation. Correspondingly, to simulate the effect of other variables, we merely need to make up arbitrary or hypothetical conditions and feed them into the simulation.

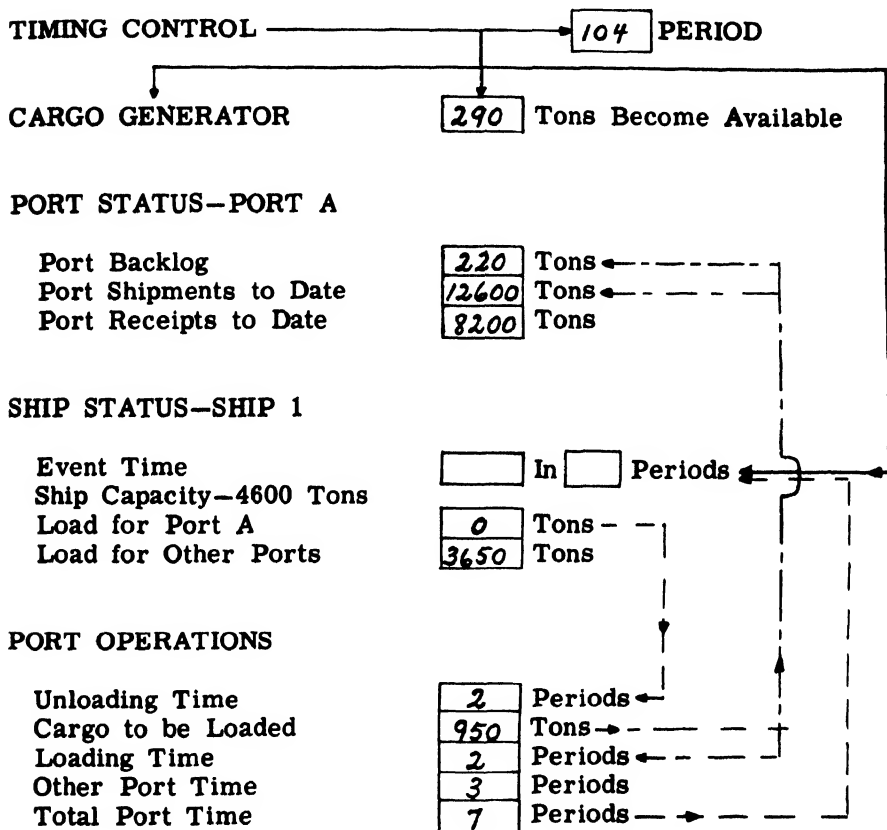


Fig. 5. Operation of simulation.

Let us, then, summarize what the simulation can do. It is a tool to study the influences of changes in hardware, changes in software, and changes in systems. It cannot solve problems for which we cannot specify the logical method of solution. It cannot improve the accuracy of input data, or make up for data deficiencies. It cannot be effectively employed without full understanding of its structure.

The brief summary of the workings of the Maritime Administration's mathematical simulation should make it possible to imagine

the uses to which it might be put. Some of these uses follow.

Evaluation of Construction Differential Subsidy Applications. By simulating the operation of the proposed vessel(s) and alternate designs in the intended trade, checks can be made on the suitability of the proposed vessel(s) both from a commercial standpoint and in accordance with provisions of policy of the Subsidy Board.

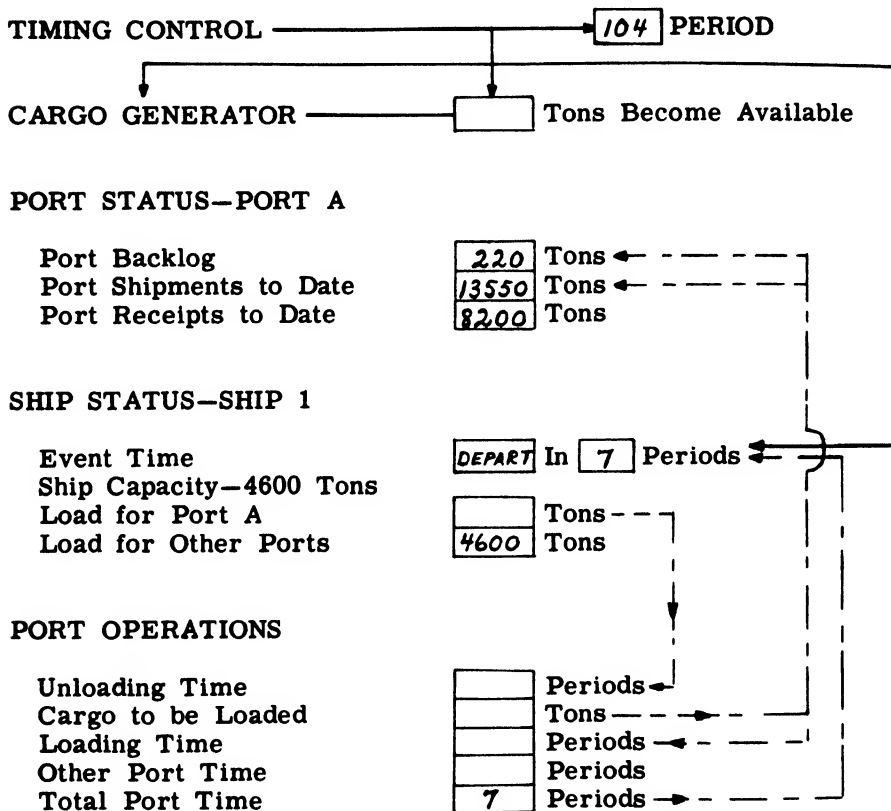


Fig. 6. Operation of simulation.

Vessel Replacement Programs. Both ship characteristics and the fleet replacement schedule can be evaluated using the simulation. The interaction between new and old vessels in the trade, particularly in terms of rate of introduction of new vessels, withdrawal of old ships, and revised itinerary and schedules, can be investigated. The simulation can also be of assistance in determining commercially feasible vessel speeds and the effect, if any, of higher speeds on the vessel replacement program, and on profits and subsidy.

Trade Route Reviews. By simulating fleet operations to a trade area, various route structures and levels of service can be investigated. The simulation will be able to show the effect of dividing or combining portions of trade areas, realigning services, and operating express and special services as an aid in reviewing the trade route structure.

Effects of Competitive Services. The ship capacity of the simulation will permit the inclusion of competitive services with their own set of rules. Cargo offerings to "U. S. flag ships" can be made dependent on the behavior of the competition's ships. General bias of cargoes to the competition will also be permitted in the simulation.

Government Control of Cargo. The effect of varying degrees of Government control of cargo offerings on fleet operations, profit and subsidy, can be investigated with the simulation.

Evaluation of Advanced Systems. The simulation can provide a tool for the "testing" of advanced systems. Criteria can be developed for potential use and the value of advanced systems. These can be used as guides in justifying further study of proposed advanced systems, and in establishing the characteristics of the system.

Sensitivity of Decisions to Reliability of Trade Forecasts. Trade forecasts are critical factors and many decisions hinge on the reliability, often unknown, of the trade forecast. The simulation provides two means for investigating the degree to which decisions are sensitive to the reliability of trade forecasts:

a. Statistically generating probable cargo quantities and types. Cargoes generated from "day-to-day" will be permitted to vary based on probability rules given to the generator.

b. Repeating operations under assigned ranges of cargo.

The Effect of Seasonal Variations in Cargo Offerings on Choice of Vessel and Fleet Characteristics. The features provided by the simulation above will permit evaluation of the effects of seasonal cargo fluctuations. It should be emphasized that this ability of the simulation program to handle variables in accordance with the uncertainties and fluctuations which actually face steamship companies provides a degree of realism which is a major advancement over present methods.

Mobilization Planning. Changes in operation to provide maximum service on a route when ships are withdrawn for military use can be developed using the simulation. Similarly, an increase in defense shipping requirement on a given trade route can be examined to determine the minimum additional ships required, and to integrate the existing ships with the added vessels as they can be made available.

Cargo and/or Revenue Pools. Pooling agreements create changes in the degree of influence which certain factors have in the process of making operating decisions. By simulating varying levels of service, itineraries and schedules under a given agreement, the influence of pools on profits and operating procedures can be examined.

Conference Rules and Rates. The influence of proposed changes in rules and rates on profits and operating procedures can be examined. Values can be derived for the proposed changes, and guidelines developed for both Government Agencies and company management to consider in taking actions on proposed changes.

Sensitivity of Decisions to Possible Changes in Operating Costs. Decisions concerning the introduction of new systems are influenced by the possibility of changes in costs of critical factors. The simulation can assist in determining the degree of influence that possible changes in labor costs (including special funds), fuel prices, etc., might have on subsidy payments and the overall economics of the proposed system.

The foregoing represents a sampling of the possible applications of fleet operation simulation.

An ancillary benefit, brought about by the necessity for carefully preparing data for the use of the simulation, will be in guiding the way toward more valuable and simpler data collecting and administrative procedures within the Administration.

Finally, the simulation is being programmed in FORTRAN language, and will be used in an IBM 7090 computer.

MATHEMATICAL MODELS IN SHIP DESIGN

Several interesting published and unpublished examples of the use of mathematical models for roughing out the design of a ship are available.

For tankers, one often used as a reference is in Harry Benford's, *Engineering Economy in Tanker Design* (Ref. 1). In this paper, Benford presents a series of curves which can be used to find quick designs of tankers.

Starting with a displacement and a shaft horsepower, one can go into the curves in a step-by-step procedure consisting of 19 steps and determine approximate length, speed, block coefficient, depth, draft, beam, cubic number, steel weight, outfitting weight, machinery weight, light ship weight and deadweight. If one wants to pursue the problem further, Benford provides economic criteria which can be used to approximate construction costs, daily operating costs and capital recovery factors. Benford's work, and similar work, has been programmed into computers so that a rather complete ship design analysis for a tanker can be developed in minutes of computer time.

The dry-bulk ship problem has been similarly attacked and solved.

Naval architects, such as the firm of George G. Sharp, can provide first approximations of bulk ship designs very rapidly, thus reducing the time and cost of a management determination of the type of bulk ship to be used in a particular service.

The dry cargo ship is a more difficult problem because these are

more variable. One approach to the problem is given in *Economics of Nuclear and Conventional Merchant Ships* (Ref. 2). This study attempts to predict costs per unit carried and return on investment for the period 1957 to 1970. It uses a ship family concept which is defined by type of cargo carried, size and speed. The American Standard Study contains information which can easily be used to make a first approximation of a dry cargo ship design.

One of the most recent uses of the mathematical model technique is contained in the Northwestern Study (Ref. 4). This study was published in 1961 and is erroneous in detail and controversial in its conclusion. However, it presents simple mathematical formulae for various aspects of preliminary dry cargo ship design. The formulae are based on a very limited number of sample ships and, therefore, should be used with caution. The methodology, however, is excellent.

As an example, analyze a 600,000 cu. ft. bale cubic ship at 18 knots, using the formulae in the Northwestern work.

From the equation

$$W = \frac{X}{44.44} \quad \text{Where } X \text{ is bale cubic}$$

the tonnage capacity is determined. In this case, W is 13,500 tons. Secondly, from the equation

$$\log L = 1.9331 + 0.347 (\log X) + 0.101 (\log V)$$

the length L is determined as about 474 feet for an 18-knot ship. (Note: X is in 10,000 cubic feet.)

Thirdly, the displacement Δ is obtained from

$$\log \Delta = 3.0903 + .2436 \left(\frac{L}{100} \right)$$

in this case, about 17,700 tons

Fourthly, the horsepower is obtained from the equation

$\log H = -1.2648 + \log \Delta + 3.4 (\log V) - 1.2 \log L$ and H is approximately 11,700 hp.

Finally, R , the cubic number, is obtained from

$$R = \frac{L^2}{1110} \quad (12 + 0.123L), \text{ about } 14,500 \text{ for the selected ship}$$

Manning equations are given as:

$$N = N_d + N_e + N_s$$

$N =$ Total Crew
 $N_d =$ Deck Crew
 $N_e =$ Engine Crew
 $N_s =$ Steward's Crew

$$N_d = 17.2689 + .3413 \left(\frac{R}{1000} \right) \quad \text{About 23 for the selected ship}$$

$$N_e = 7.1537 + .1221 \sqrt{H} \quad \text{About 21 for the selected ship}$$

$$N_s = .2633 (N_d + N_e) \quad \text{About 12 for the selected ship}$$

$$\text{Total 56 for the selected ship}$$

and cost of ship construction is given as

$$K = 668R + 29600 \sqrt{H}$$

The Northwestern work goes on to formulate costs even so far as showing the maintenance cost per day of a ship as

$$M = 186.15 + .18615K$$

In summary, again it is easy to imagine how rapidly the design of a cargo ship could be approximated if the above equations were programmed into a computer, and how the computer program could be used to determine the critical factors for ships in a particular marine transportation system.

CONCLUSION

It is difficult to write a conclusion to a paper which does not set out to make a point and which can only partially describe the things to which it is addressed.

The program described is an action program and reports are not being written about it. The mathematical model of merchant fleet operation will be a dynamic tool. As the tool is manipulated, we will at least be in a position to better understand our industry.

If you are confused, this has been a waste of time. If your imagination can visualize uses for the method, our total purpose has been accomplished.

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USE OF COMPUTERS IN STEAMSHIP OPERATIONS

Samuel Ewer Eastman

INTRODUCTION

In the fall of 1958, the Operations Research Group of Technical Operations, Incorporated was completing an analytical study of the freighter operations of the Matson Navigation Company for the Research Department of that organization.¹⁴ As sponsorship research goes, this had been a substantial program involving three or more analysts full-time over approximately a six-month period. The work had included a number of trips by those working on the project to sponsor's terminals and ships in California, as well as numerous briefings by management on the East Coast.

The focus of the problem was on technological innovation—specifically the study of different van ship systems feasible for Matson and the selection of one or more for the particular trades in which this company is engaged. The study was not a “wild-blue-yonder” system analysis; rather, concrete realistic alternatives were examined. For example, what were the advantages of converted *C-4*'s over *C-4*'s already on the market as van ships, those over *C-3*'s carrying deck vans and *C-3*'s converted to receiving vans by way of deck slots rather than hatches? For what vanable cargo and what corresponding “acceptance” of the van systems by consignors and consignees would deck cranes on van ships make more sense than pier gantries at the ports served? In an attempt to answer these and similar questions, the decision-making criterion selected was to minimize total cost including allowances for a discounted present value of the capital required.¹⁵ The approach was to assume first that a well-financed competitor could engage in the liner and charter services offered, and further, that this competitor could obtain the cargoes carried by Matson over the previous several years. Secondly, answers were sought

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¹⁴ Foster L. Weldon was then and is today the Director of Research of the Matson Navigation Company. See Ref. 2.

¹⁵ It should be noted that had maximization of profit been selected as the decision-criterion, a number of arbitrary constraints would have to have been introduced of necessity, since Matson is engaged in providing liner service.

to the question, "What investment would a prudent business concern make for the trade of this company?" Treated at the same time was the ancillary question, "Given the optimum fleet for the trade, what is the lowest level of rates that could prevail and still guarantee a fair return on a prudent investment wisely made?" These are not simple questions to answer with any degree of rigor or authoritative-ness, and yet they pose the kinds of problems with which all top management must deal. No way has been found and no model of the real world has been constructed that will provide *complete* answers; one may venture to suggest that none ever will.

An extensive model was constructed and a number of replications were made covering different values for two or three of the most interesting variables taken in combination. This type of analysis is now well understood and is extremely useful. After numerous interactions with the sponsor, it was suggested that an additional analytical tool of substantially broader scope, one which provided a "living" simulation of Matson's activities might be even more useful. The problem was not only to test "one-time" changes, such as the major capital investment program involved for the purchase of a van ship fleet, but to provide modern analytical assistance which would improve management's ability to deal with small week-to-week changes and be able to forecast the effect of a change in one activity transmitted through the activity of the entire fleet. Of course, management wanted to be able to see the impact of a number of such small changes and have "answers" in a relatively short period of time.

The task of starting to construct such a simulation of steamship operations was undertaken by Tech Ops for Matson.¹⁶ It must be emphasized that the work done initially was only a first-cut at a very large problem. A great deal more analysis, study and programming had to be undertaken before anything like an operational simulation of steamship operations would result. The work was, however, a pioneer effort in computer applications and the use of computers in steamship operations for tasks other than those of accounting.

The model was completed through the concept stage and initial flow charting. It was delivered to Matson ready for initial programming on the IBM 704 in April of 1959. The test which follows is a report on this initial application of computers to business situations for analytical purposes. The following material is organized into sections dealing with the *Structure and Brief Description of the Model*, a discussion of some of the *Features of the Model* and finally a section on general conclusions wherein some assessment of *Practicability and Utility of Simulation* is attempted.

¹⁶ The work was done by Mr. Carl Friedman under the guidance and direction of Mr. Robert A. Langevin, Director of Computer Applications and Research. See Ref. 1.

STRUCTURE AND BRIEF DESCRIPTION OF THE MODEL

The model simulates, as realistically as possible, the various operations within the freighter-fleet system. Included in the complete simulation are sub-models that simulate cargo handling, cargo shipping, labor effort, and docking and berthing. The model is designed to handle several types of ships, such as the pure van ship, the deck van ship, and the general cargo ship. Also, in order to supply the various ports in the system model with realistic cargo offerings, a commodity generation program has been designed.

The simulation model has been designed so that a variety of new concepts and ideas may be tested before they are put into practice. Typical situations that can be investigated are the effects on the system of converting to pure van ships, the effect of providing new schedules and new scheduling principles, and the effect of losing selected important cargoes to competitors.

The computer simulation program has been divided into three major sections as shown in Fig. 7; these are:

Commodity Generator Program; Fleet-Operations Simulator Program; Cost Accounting Program.

The Commodity Generator Program. This program is constructed to simulate a realistic pattern of cargo offerings as a function of time. In order to do this, it requires for each port in the system a list of commodities to be offered from that port. For each port-commodity pair, the following input data must be compiled and organized into tables:

1. A list of periodic offerings represent the cumulative offerings of a certain commodity taken over a specified interval of time. For example, the list may be a monthly cumulative offerings list; thus each entry in the list is the sum of thirty days offerings for this commodity. The list of periodic offerings is arranged in chronological order so that the generated cargo offerings reflect seasonal changes.

2. A list of destination ports to which the commodity will be offered.

3. For each destination port a fraction must be given which determines that part of the total offerings from the port of origin which will be offered to the destination.

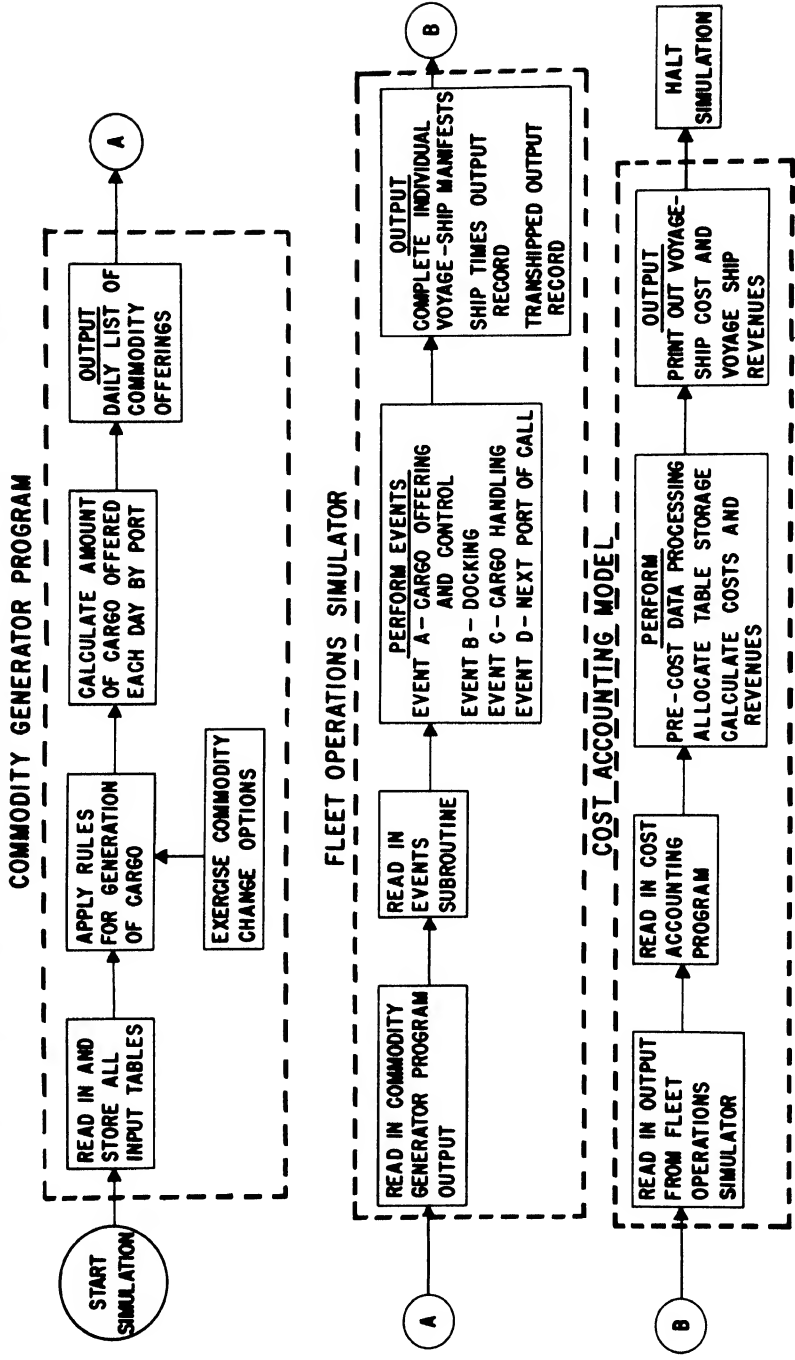
4. A distribution of fluctuations from the periodic offerings. The entries in this distribution represent realistic possible deviations from the expected periodic offerings. The program makes it possible to choose at random from the distribution table and simulate the random daily changes in offerings which are anticipated.

The output of the Commodity Generator Program is a simulated daily list of port-commodity-destination offerings which takes the following form:

Day number of offerings
Port from

Commodity offered
Port to

SIMPLIFIED FLOW DIAGRAM SIMULATION OF FREIGHTER-FLEET OPERATIONS



The amount of offering in either measurement tons or weight tons (based on tariff) is used by the Fleet-Operations Simulator Program to update the commodity inventory at each port each day.

The Fleet-Operations Simulator Program. The Fleet-Operations Simulator Program is concerned with the simulation of the mechanics of the freighter-fleet operations. The model, as shown in Fig. 2, is subdivided into a series of independent functions grouped under four event headings each representing a particular phase of steamship operations, such as loading and discharging a ship, sailing a ship, berthing a ship, computing commodity loading and discharging rates, and the like.

Before examining the event structure of the simulator, it is appropriate to describe the significant parameters which characterize the fleet and the fleet operations; these are: Ships and Ship Types; Commodity Types and Cargo Types; Schedule Types; and Characterization of Ports.

Ships and Ship Types. Each ship in the fleet is characterized by type, van capacities, weight capacities, cubic capacities, speed capabilities, cargo preferences, schedules, and schedule changes. With these parameters the various subroutines in the model can determine for any ship what cargo will be chosen at a port, what ports to call on, and what the sailing time will be between ports. The characterization of the ship by parameters such as those described above makes it possible to consider a wide variety of ship types. The model is set up to consider five specific types. These are:

1. Sugar Ship. One which will primarily carry sugar from the Hawaiian Islands to a west coast port. However, in some cases, sugar ships may carry refrigerated cargo.

2. Pure Van Ship. One which will *only* carry vans.

3. Deck Van Ship. One which will carry vans on deck and general merchandise below decks.

4. General Merchandise Ship. Will carry all cargo except vanned cargo.

5. Charter Ship. A general merchandise ship and can be used for carrying either sugar or non-vanned cargo.

Commodity Types and Cargo Types. The simulation is designed to consider up to a maximum of 63 distinct commodities. Commodities are characterized by the following parameters: Commodity Code Name, Cargo Type, and Measurement Tons or Weight Tons.

Each commodity is classified into a specific type of cargo. These cargo types are:

| | |
|--------------------|--------------------------------|
| Sugar cargo | General merchandise |
| Refrigerated cargo | Bulk dry cargo |
| Vehicular cargo | Military sea transport service |
| Bulk liquid | (MSTS) cargo |
| | Lumber cargo |

Each commodity is offered and measured in either measurement tons or weight tons, whichever classification brings the most revenue according to tariff rules.

Density of cargo and variable or non-variable cargo are other classifications. The last classification is used to determine which cargo can be put in vans.

Schedule Types. The simulation is designed to handle three basic types of sailing schedules. These are:

CHARTER SHIP SCHEDULE. In certain cases the models will charter a ship to alleviate excessive inventory at a port. In this case, the charter ship schedule will be generated by the program and it will consist of one leg of a voyage. That is, the chartered ship will be permitted to alleviate the excessive inventory at a port and discharge its cargo at destination, but it will not be permitted to make a return trip. (See the discussion of Panic Routines on page 135, Event A.)

FIXED SCHEDULE. The fixed schedule resembles the Standard Matson Schedule in that a ship which sails on the schedule is given a set of ports of call and allotted number of days to be spent loading and discharging cargo at these ports of call. A ship which sails on a fixed schedule will stop at each port of call listed in the schedule.

MAJOR SCHEDULE. A ship sailing on this schedule is given a list of ports of call. These ports of call are distinguished by classifying some or all of them as major ports and the remainder as minor ports. For example, Honolulu could be considered a major port and Port Allen a minor port. The program will permit the ship to call at all ports that are considered major, but will decide on the basis of some function of cargo offered whether the ship will call at a minor port. If a ship is carrying cargo for a minor port, no test will be made and the ship will stop at that port. On the other hand, if the ship is not discharging at the minor port, then a test will be made to decide its next port of call. The major schedule does not include days in port, and the ship will depart as soon as it has discharged and loaded all of its cargo.

Characterization of Ports. Each port in the system is characterized by its general location. The distinction is whether it is a port belonging to the Islands groups or the West Coast group. The other port characteristics are:

1. The number of pure van berths if the port is a van service station.
2. The number of deck van berths if the port is a van service station.
3. The number of sugar loading berths if the port is a sugar loading port.
4. The number of sugar discharge berths if the port is a sugar discharge port.
5. Port Entry Delay Distributions/Departure Delay Distributions.

These distributions are tables of time delays that a ship may encounter in entering or departing a port. These distributions include the following types of time delays: delays in acquiring a pilot; delays in unfavorable tide and weather conditions at the port.

The entries in these Port Entry and Departure Delay Tables are chosen in a random fashion for each ship that enters and leaves the port.

6. Port Labor Parameters. These parameters describe the long-shoreman working rules and straight-time and overtime rules.

7. Port Labor Productivity Factors. In order to compute realistic load and discharge rates for each commodity considered in the model, there exists at each port a port labor productivity factor for each commodity. Each commodity is classified by a cargo type for which there is a table of load rates and discharge rates. This table is sampled in a random fashion, and when a particular rate is chosen, it is modified by the commodity-port labor factor. This procedure will give a realistic approximation to the load or discharge rate for the commodity.

All of the foregoing general considerations apply to the simulation program of freighter-fleet operations. So far the discussion has dealt with the data handled by this part of the simulation and what factors are applied to these data.

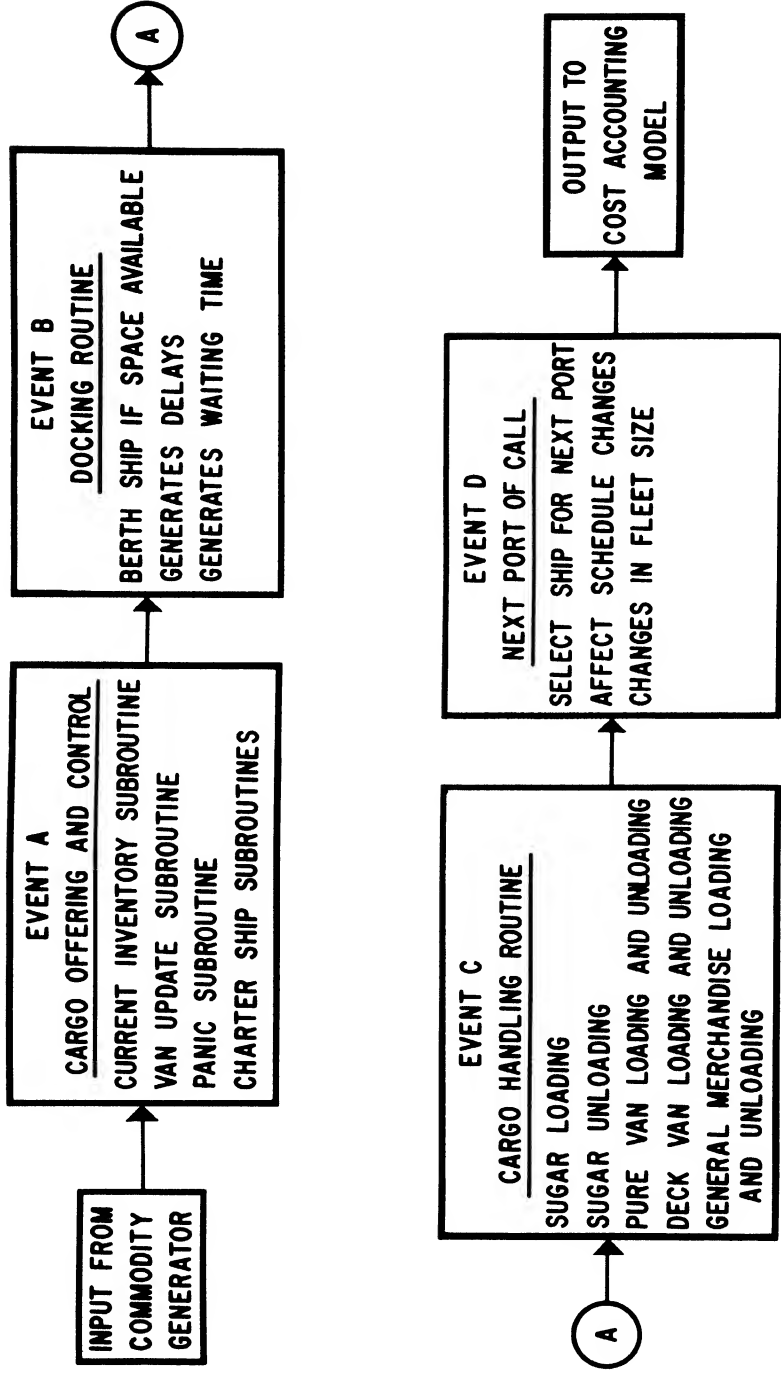
The actual simulation process is performed by the occurrence of four events each of which is made up of a number of sub-events, programs or activities. The four events are, as shown in Fig. 8, Event A—Cargo Offering and Control, Event B—Docking, Event C—Cargo Handling, and Event D—Next Port of Call.

Event A—Cargo Offering and Control. This event consists of the following operations: Current Inventory Subroutine; Van Updater Subroutine; Special Commodity Monitoring Routine; Panic Routine; Charter Ship Routine.

CURRENT INVENTORY SUBROUTINE. This subroutine updates the current inventory at each port each time it is called into use by adding to the current inventory the daily cargo offerings generated by the commodity generator program.

VAN UPDATOR SUBROUTINE. In order to simulate the delays encountered in circulating the vans to various ports throughout the system, the van-discharge-routine places the discharge vans into various day-delay-counters (by a prescribed routine), that is, there is a 10-day delay counter, 9-day delay counter, and the like. A van placed in the 10-day delay counter will not arrive at the van service station until 10 days of simulated time have elapsed. The function of the Van Updater Subroutine is to advance the vans held in these various delay counters by one day, so that there is a realistic flow of vans into the van service station.

FLEET OPERATIONS SIMULATOR



SPECIAL COMMODITY MONITORING ROUTINE. This special routine was set up initially to monitor the sugar offerings. The sugar offerings for each month are compared with the scheduled tender. If the actual offerings for a particular month are less than the scheduled tender less 8000 weight tons of sugar, a dead freight penalty is charged against the sugar shippers for that month.

PANIC ROUTINE. In order to simulate excessive inventories of priority cargo there exists at each port a list of commodities which are called panic commodities. The panic routine checks the current inventory of these special panic commodities daily. If any given panic commodity exceeds a specified amount, one of five panic options may be chosen. These panic options are designed to simulate such things as customer dissatisfaction and over capacity at a port. Since the panic options are examples of intended flexibility built into the simulation, they are discussed more fully on page 143, "Features of the Model."

CHARTER SHIP ROUTINE. The output of the panic routine will be a list of those port-panic commodity combinations. The charter ship routine will first separate these port commodity pairs into two groups: a west coast charter commodity group, and an islands group. The routine will next sum for each group the total weight of panic cargo offered, and the total cubic of panic cargo offered. These sums will enable the routine to decide how many ships will be required for each group.

The next step in the routine is to create a schedule for each charter ship. The schedule is based on the panic ports and the destination ports to which the commodity has been offered.

For each chartered ship there is a random delay time computed. This delay time is to simulate the fact that a charter ship is not always available when needed. The delay time is a function of whether the charter ship is for the west coast ports or the island ports.

Event B—Docking Routine. Having determined the cargo to be offered and controlled the variables associated with these offerings, the next steps are to berth the vessel and then handle its cargo. Event B simulates the former activity and Event C the latter one.

The dock routine simulates performance by bringing ships into a berth if berths are available, generating the various delays encountered in berthing a ship, and computing waiting times if no berths are available.

Each ship which enters this routine carries with it a port of call and an arrival time. For sugar ships, pure van ships, and deck van ships, a check is made to see if the port has any available berths. If there are none available, the routine sets up Event B for this ship for one hour later, and considers the hour as waiting for berthing time. In this way a count is kept of the waiting hours required for these ships to obtain a berth.

For chartered ships which are not carrying sugar and for general

merchandise ships, the routine assumes that there are sufficient berths available so that there is no waiting time.

For ships which berth, the routine computes a berthing time, and checks to see if this is a time for which initial labor starts can be made. If this is not the case, the time for berthing is delayed so that the ship may berth at a proper labor start time.

In order to simulate a realistic cargo offering to ships, the routine allows the current inventory to build up until a specified time is reached (called the cargo cut-off time). This cargo cut-off time is either computed from a scheduled time of departure or from the berthing time. That is, the cargo cut-off time is computed by either adding a parameter to the berthing time or subtracting a parameter from the departure time. For ships which are on a fixed schedule, the time of departure is computed by considering only the berthing time plus the number of days to be spent in port.

In summary, the dock routine computes the following time for a ship arriving at a port:

1. Time of arrival
2. Time of berthing
3. Waiting time or waiting to berth time
4. Cargo cut-off time
5. Labor start time. This is either time of berthing or time of berthing plus x hours where x hours is the delay required to allow the ship to enter the berth at a proper labor starting time.
6. For fixed schedule ships, the time of departure.

The dock routine then sets up the next event for the ship which is Event C, Cargo Handling.

Event C—Cargo Handling Routine. Event C is a general classification simulating the loading, discharging and labor functions of the fleet-operations. It contains the following sub-events which are intended to cover all vessel-commodity-port combinations:

1. Sugar loading
2. Sugar discharge
3. Pure van loading and discharging
4. Deck van loading and discharging
5. General merchandise load and discharge
6. Labor model

In this section all of these distinct operations are taken as Event C, though it must be remembered that the sub-events combine differently for different vessel-commodity-port combinations. A few brief comments on each subroutine is appropriate.

NON-VANNED DISCHARGE ROUTINE. This routine examines the ship's manifest (which is created by the loading routines) and determines the non-vanned cargo which is to be discharged at the port. It classifies the cargo to be discharged by cargo type; chooses at random a discharge rate from the rate distribution table for this cargo type; modifies the discharge rate by the Port Labor Productivity Factor

for this commodity; and finally computes a time for discharging this commodity. When the total discharge has been completed at the port, the routine has determined the total time in gang hours for discharging. It has also determined the time used for discharging M.S.T.S. cargo. This breakdown in discharge times is made in order to simulate the practice of the military of discharging their own cargo. Finally, the routine adjusts the various ship capacities according to the weight and cubic of the discharged cargo.

VAN DISCHARGE ROUTINE. When a pure van ship or deck van ship enters a port which is a van service station, the routine examines the ship manifest for the vanned cargo which is to be discharged. This not only includes the vans for the port at which the ship is presently berthed, but other "associated" ports for which the van service station port acts as a control point or service point. For example, all vans going to the islands are discharged in Honolulu on Oahu, even though the cargo within the van is for Hilo on the Island of Hawaii. The van discharge routine computes a total time in gang hours for discharging the vans and distributes the discharge vans to the various van delay counters (described above) at each port.

For pure van ships, the routine adjusts the remaining van capacity of the ship; for deck van ships, however, the routine adjusts the remaining van capacity and also the remaining weight capacity of the ship.

NON-VANNED LOAD ROUTINE This routine generates a ship manifest listing all the cargo which is to be loaded on the ship at the port and determines the total time to load the cargo. The routine operates in the following manner. With each ship there is included a cargo type preference list. This list determines the commodities which the routine will select for loading. The schedule determines the destinations to which the ship will carry cargo. The routine, having both a preferred commodity list and a list of destinations, computes the cubic capacity of the acceptable refrigerated cargo offered at the port and the available refrigerated cubic capacity of the ship. It then considers which is the greater of the two.

Case 1. Refrigerated cargo offered is greater than the refrigerated space available on the ship. In this case, the ratio of offered to available is formed and the amount of each commodity that can be put on the ship is computed.

Case 2. Refrigerated cargo offered is less than the remaining space available. In this case, all the acceptable cargo offered can be loaded on the ship.

The routine handles non-refrigerated cargo in the same way as refrigerated cargo.

After loading both the refrigerated and the non-refrigerated cargo, the routine computes the remaining weight capacity of the ship. It then adds bulk liquid cargo until it reaches its full displacement.

The outputs of the non-van loading routine are:

| | |
|--|--|
| A completed ship manifest of cargo loaded at this port | Time in gang hours to load M.S.T.S. cargo |
| Time in gang hours to load the ship | The adjusted weight and cubic capacities of the ship |

VAN LOADING ROUTINE. The routine considers the vannable cargo in the current inventory that is bound for the destinations listed in the pure van ship or deck van ship schedule. It is a complicated routine because it develops rules for taking into account differences in cargo density from density acceptable by van, the availability of vans and vannable cargo offerings, and the availability of van spaces aboard ship and the vans offered for shipment.

At the completion of this routine the following data has been computed:

| | |
|---|--|
| Time in gang hours to load vans | The number of vans loaded |
| A ship manifest of the commodities carried in the vans | The remaining van capacity of the ship |
| In the case of the deck van ship, the remaining weight capacity of the ship | |

It should also be noted that in both the van discharge routine and the van loading routine, when vans are either discharged or loaded from ports other than the van service station, a record is kept of the transhipped vanned cargo. This record of transhipped cargo will be used by the cost accounting routine (see page 141) to compute the cost of transshipping vans from port to port.

LABOR MODEL. Up to this point in Event C, Cargo Handling, the following parameters have been computed by previous programs:

| | |
|---------------------------------|-------------------------------|
| Labor start time | Time to unload M.S.T.S. cargo |
| Time to unload non-vanned cargo | Time to load M.S.T.S. cargo |
| Time to load non-vanned cargo | Time to discharge vans |
| Time to load vans | |

The labor model operates in the following way: the labor routine first considers the van load-and-discharge-time and if it is not zero, chooses at random an entry from a gang availability distribution for this port. This entry gives the number of gangs available at the time. It compares the magnitude of this entry with the maximum number of gangs which can work a particular ship. If the magnitude of the entry is less than this maximum, the entry will be used as the actual number of gangs which will work the ship. If, on the other hand, the entry is greater than the maximum number of gangs that can work the ship, this maximum will be used. In either case, the routine has determined the number of gangs which will carry on the non-van loading and discharging.

As has been mentioned above, there exists at each port certain

parameters which describe the longshoreman working rules. The simulation model describes these rules in the following fashion. It considers that each day has three shifts. Each shift is described by five parameters. These are:

A starting time for the shift.

An ending time for the shift.

Minimum allowable time for this shift. This parameter simulates the four-hour minimum working rule for longshoremen in the San Francisco area for example.

Time in the shift for overtime to

begin. (For example, if this is the 8 a.m. to 5 p.m. shift then overtime begins at 3 p.m.)

Overtime Factor. In certain shifts, overtime is actually double time. The overtime factor is used to adjust the overtime hours so that costs can be allocated properly in the simulation.

The labor model will work the gangs the maximum number of shifts until the total non-vanned cargo is discharged and the offerings loaded. With each shift change the model will compute straight time hours and total overtime hours. Moreover, the model takes cognizance of the fact that all work done on Saturday and Sunday is overtime.

The labor routine then considers the sum of the times to load and discharge vans. However, this time, in place of the gangs, it will use a port facilities number which gives the number of cranes at the port. Then, in the same manner as for gang time, it will compute van straight time and van overtime.

The output of the labor model is:

1. The number of hours of non-van loading-and-discharging straight time.

2. The number of hours of non-van loading-and-discharging overtime.

3. Van loading-and-discharging straight time.

4. Van loading-and-discharging overtime.

5. Total number of days and hours spent in port to load and discharge cargo (including M.S.T.S. cargo handling).

6. In order to measure the effectiveness of the various schedules, the model computes a time which is called idle time. Idle time is defined as the difference between the actual time of departure and the time the ship is completely loaded and/or discharged and ready to depart.

Event D—Next Port of Call Routine. In addition to moving the vessel from the port where the cargo handling operation has been completed to the next port of call, Event D performs a variety of administrative functions, as well. These include:

1. Choosing for any ship its next port of call. For ships which are on the fixed schedule, this is done by checking the schedule and choosing the next port on the list. For ships which are on the "Major" schedule, check is made to see if the next port of call is a minor port, and whether the conditions for stopping at minor ports have been

met. If the conditions have been met, this minor port will be the stop. If the conditions have not been met, the next port on the list is considered and the same test applied. Of course, the ship will stop always at major ports.

2. Each ship in the fleet is permitted to change its schedule several times during the simulation, at specified times. These changes are taken from a schedule change list. Moreover, each ship in the fleet is permitted to dry-dock for a period of time. Event D sets up the dry-dock function which, in a sense, is like a schedule change and is taken from the same list.

3. In order to anticipate such operation changes as reducing the fleet size, the simulation allows for ships to be decommissioned, and this operation is also included in the schedule change list.

Outputs: Fleet-Operations Simulation. The data generated by the Fleet-Operations Simulation program is used by the cost accounting model to compute realistic operational costs as well as revenue.

For each voyage a ship in the fleet completes, the following data is recorded for subsequent analysis by the cost accounting model; the data is organized and tabulated for storage:

SHIP MANIFEST RECORD. This forms a complete record of the cargo carried which includes the following:

| | |
|--|------------------------|
| Ship name | Commodity name |
| Voyage number | Destination (port to) |
| Port name (port from) | Amount in W.T. or M.T. |
| Number of vans, if the commodity was carried in vans | |

SHIP'S TIME TABLE. This table forms a complete list of the various time parameters which are computed during the simulation:

| | |
|--|---|
| Ship number | Non-van overtime |
| Voyage number | Van straight time (number of hours to load and/or discharge vans) |
| Port of call | Van overtime |
| Sea-time (from last port of call to present port of call, including any port transfer time) | Time in gang hours to discharge non-van cargo |
| Waiting to berth time | Time in gang hours to load non-van cargo |
| Port entry sailing time (this is distinguished from sea-time because of the change of speed in port) | Time in gang hours to discharge M.S.T.S. cargo |
| Idle time (this concept was defined above) | Time in gang hours to load M.S.T.S. cargo |
| Non-van straight time (number of hours of straight time to load and/or discharge cargo at the port) | Time in gang hours to discharge vans |
| | Time in gang hours to load vans |

TRANSHIP VAN CARGO RECORD. This record forms a complete list of all the vannable cargo that was transhipped between ports in the same location.

For each transhipped commodity the list contains:

| | |
|------------------------|--|
| Ship number | Number of vans |
| Voyage number | Port name (van service station) |
| Port name (port from) | Vans discharged at a van service station for an associated port, or vans loaded at a van service station from an associated port |
| Commodity name | |
| Destination (port to) | |
| Amount in W.T. or M.T. | |

In summary the output from the Fleet-Operations Simulator is a detailed breakdown of each individual voyage-ship cargo manifest on a daily basis, a detailed ship's time table for each vessel in the fleet on a daily basis, and a similar daily breakdown of transhipped cargo or vannable cargo that was transhipped. These data are inputs to the Cost Accounting Model.

The Cost Accounting Model. The final section of the simulation model is the cost accounting routine. The major function of this routine is to put a dollars and cents value on the data generated by the fleet-operations simulation program. The model also serves as the final output for the system by producing an individual account of each voyage, along with monthly and annual summaries of the results of the individual voyages.

The model performs the following cost computations:

1. For each Ship Manifests Record and the Associated Ship Times Table.

a. Labor Costs: Straight time and overtime costs based on a cost per gang hour of labor. This is done for both the vanned and non-vanned cargo since the gang sizes for these two cargo handling concepts differ.

b. Dockage: For each port-ship combination there will be dockage rate based on the net registered tonnage of the ship. Dockage rates will be based on a 24-hour or 12-hour period.

c. Towage: The towage rate is based on the average towage rates for any port-ship combination.

d. Pilotage Costs: Pilotage costs will be considered in the same way as c above.

e. Fuel Costs: The data generated by the fleet-operations simulator program contains four numbers for each port of call the ship has made which are used in computing fuel costs. These are:

| | |
|-------------------------|---------------------------------|
| Sea time | Waiting time |
| Port entry sailing time | Time from berthing to departure |

For each of these times there is a parameter in a table entitled Ship Costs which will enable the model to compute fuel consumption for each of these times, and hence the cost of fuel. These parameters are:

| | |
|-----------------------|-------------------------|
| Maximum horsepower | Waiting time horsepower |
| Port entry horsepower | Port horsepower |

f. Crew Costs: Crew costs for a ship include:

| | |
|-------------------|----------------------------|
| Crew wages at sea | Crew wages in port |
| | Stores and equipment costs |

g. Insurance Costs: Insurance costs include:

| | |
|-----------------------|------------------------|
| Costs/ship/day at sea | Costs/ship/day in port |
|-----------------------|------------------------|

h. Miscellaneous ship costs

i. Wharfage: For each commodity-port combination, there will be a charge in cents/ton for all cargo either loaded or discharged at that port. The units will be either M. T. or W. T. depending on which-ever units are used for the commodity.

j. Lines Cost: For each ship-port combination, there will be a cost for either tying or untying lines.

2. For each ship voyage, the revenue will be computed. Each commodity included in the simulation has a tariff rate in cents/ton. There will be a distinction in tariffs between vanned cargo and non-vanned cargo. The tariff table will also reflect the differences in rates for eastbound and westbound cargo.

3. Transshipment cost record. This cost record will be the cost of transshipping vanned cargo from port-to-port.

4. Monthly ship-voyage cost and revenue summaries.

5. Monthly transshipment cost and revenue summaries.

6. Monthly overall ship's cost and revenue summaries.

7. Annual costs for the fleet, annual revenue.

All of the foregoing calculations are performed by the Cost Accounting Model in three basic steps. First, pre-cost accounting data processing is performed which arranges the output from the fleet-operations simulator in proper format; secondly, a cost accounting table storage routine is called into play which prepares for tables to be generated by the cost accounting program; and, finally, the cost accounting program itself is called into play to cost out the individual ship records and organize the desired print-out summaries by months, by voyages, and by ships.

Summary: The Operation of the Simulation. In actual operation, the simulation would begin at some selected point in time and by initiation of the Simulator Control Program. This program performs the following functions:

1. Initializes events, cargo, and ship capacities.

2. It sorts through the event table and chooses the event with the smallest time tag. The event with smallest time tag becomes the next event to be performed by the program. In case of ties in time, the event which is first on the list will be performed except in the case that one of the events is Event A, Cargo Offering and Control Routine. In this case, Event A will always be performed first.

3. It completes the simulation by checking the length of time the

simulation has been in operation against the number of days and hours which is the desired time of the simulation.

4. It prepares the data generated by the fleet-operations simulator program for the cost accounting routine and reads in the cost accounting routine.

As set forth in detail above, therefore, the simulation model consists of three major programs. These programs are: The Commodity Generator Program, The Fleet-Operations Simulator Program, The Cost Accounting Program. The design of these programs makes it possible to operate either of them independently of the others. The Commodity Generator is designed to produce a tape on which is stored each day's daily increments of commodity offerings. Each day's commodity offerings forms a block of data on the tape. When the commodity generator program has completed generating the offerings for each day in the simulation, the tape should be rewound, and the Fleet-Operations Simulator Program should be read into the computer. In a similar manner, the data generated by the Fleet-Operations Simulator Program should be sorted either on tape or drum in preparation for analysis by the Cost Accounting Program. In the complete simulation there is, therefore, the following sequence of computer operations:

1. Read in Commodity Generator Program.
2. Read out daily increments of commodity offerings.
3. Read in Fleet-Operations Simulator Program.
4. Read out individual voyage-ship manifests and ship's time records, and transshipment records.
5. Read in Cost Accounting Program.
6. Print out.

Operating voyage-ship costs and voyage-ship revenue

Operating monthly voyage-ship summaries

Operating overall ship monthly summaries

FEATURES OF THE SIMULATION

The model described above that was designed and initially flow-charted by Tech Ops for the Research Department of the Matson Navigation Company might best be understood when it is emphasized that it is an "automatic" simulation. That is to say, it was intended that the model would be a complete entity unto itself when realized on a digital computing system; once a run of this simulation was started, no man-machine interplay was contemplated. The model is set up for a run and, during the run, only changes already programmed can be made.

Obviously, a model of this type tends to be relatively inflexible since the only way changes can be made is to go back to the flow charts and reprogram to produce the desired changes. To overcome this basic

objection of the inflexibility inherent in automatic simulations, resort was made to providing a number of user options, and random and stochastic techniques. Allowing such characteristics in the model initially and by design can be of great importance in increasing the usefulness of such a model. Some of these features merit comment; following is a discussion of the Commodity Generator Program, Panic Options and Charter Ship Routines, and Random and Stochastic Aspects.

The Commodity Generator Program. The Commodity Generator Program is set up to allow the user to affect the normal variations in cargo offerings by specifying one of three types of commodity changes, and to allow the user to make these changes at any point in the time during the simulation desired. As an example, assume it is desirable to simulate a sugar workers' strike for the month of June. During this month the sugar offerings for all sugar ports would be zero. At the end of the strike, the normal amounts of sugar will be affected by some multiplicative factor which would reflect the abnormal buildup of inventory. In this way, the effects of a strike can be felt by the system, firstly as a depletion of sugar offerings, and secondly in the excess offerings. The Commodity Generator Program offers the user considerable flexibility by means of the several commodity change options available. These changes or options allow for changes that can affect the total port offerings, the offerings of a particular commodity at a particular port, and changes that can affect the offerings of a particular commodity at a port bound for a specified destination.

Panic Options and Charter Ship Routines. It will be recalled as noted in the discussion of Event A. "A Cargo Offering and Control", in the Fleet Operations Simulator, that the Panic Routine checked the current inventory at each port of selected high priority commodities to determine whether or not such inventories are excessive at any given time. In an attempt to simulate customer behavior (including customer dissatisfaction), from an inadequate quantity of service, the following Panic options come into operation:

Panic Option 1. If after a specified time the panic situation still exists (i.e., the current inventory still exceeds a specified amount) the cargo will be lost.

Panic Option 2. If after a specified time the panic situation still exists, the cargo will be lost, and also any subsequent cargo offered to this type will be lost to the system.

Panic Option 3. If after a specified time the panic situation still exists, an attempt will be made to charter a ship for this commodity and other panic commodities.

Panic Option 4. If after a specified time the panic situation still exists, an attempt will be made to charter a ship. If, however, the arrival time of the chartered ship is such that it exceeds another specified time, then Panic Option 1 prevails.

Panic Option 5. If after a specified time the panic situation still exists, an attempt will be made to charter a ship. If, however, the arrival time of the chartered ship is such that it exceeds another specified time, then Panic Option 2 prevails.

In all of these panic situations the routine records such items as the number of times the panic situation has occurred and the amount of lost cargo. Following the election of proper Panic option or options, the Pre-charter Ship and then the Charter Ship routines come into operation. The function of the former routine is to establish a list of panic commodities for which the panic condition exists. This list is formed by classifying the panic cargo into two groups. One group consists of the panic commodities for the Islands, and the other group consists of the panic commodities for the West Coast.

The Charter Ship Routine then operates and surveys each commodity list, created by the pre-charter ship routine and for each commodity listed, the routine computes the weight and cubic of the commodity, and estimates the remaining capacities of the chartered ship if the commodity were to be loaded. When the remaining capacities are zero, the routine will charter another ship and continue to process the remaining cargo on the site list. The routine will continue to do this until all the cargo at a site has been processed. For each ship chartered, the routine produces a list of ports at which the panic commodities for this ship are maintained and a list of charter commodities which are to be carried by the charter ship.

Finally, a brief Charter Ship Destination subroutine establishes the list of destinations to which the charter ship will sail. It should be noted that the Panic and Charter Ship Programs are controlled by the Event A control program.

The program will only perform those functions which are necessary to perform in any 24-hour period. For example, if no panic commodity condition exists, then the Event A control program would not perform the routines concerned with chartering a ship. However, Event A is performed each day of the simulation, and the Event A control program establishes itself in every 24-hour period.

Random and Stochastic Aspects of the Simulation. In order to simulate some of the randomness that actually takes place in the operation of a fleet of freighters (i.e., variations in loading rates from port to port; steaming times and the like), resort was made to the preparation of several input data which represent the *distributions* of these random elements in the system. The entries in these tables will be chosen at random.

The method works roughly as follows. Suppose, for example, in the case of commodity arrivals at port as a function of hours prior to posted sailing time in a liner service, the *average* values are known from past records. It is also known that consignors and shippers vary in the time at which they deliver cargo; the operator's problem is not

to deal with averages based on past experience but to forecast as accurately as possible how the offerings actually will arrive so that proper and efficient use of transit space and vessel berth time can be made to simulate this "forecasting". A distribution of offerings against time weighted by frequency of occurrence is used instead of the average or expected values. In the simulation designed, a number of such variables are treated in this manner. Some of these are noted below.

Deviation Tables for the Commodity Generator Program. The Deviation Table contains entries which represent the fluctuations in the periodic offerings. Each port-commodity combination may refer to its own Deviation Table. However, the program is set up so that more than one port-commodity combination may use the same Deviation Table to insure that the sum of the daily increments will equal the annual tonnage offered.

Site-Charter Delay Table. The entries in this table are the delays the shipper anticipates in attempting to charter a ship at a particular grouping of the West Coast ports, and Hawaiian Island ports.

Port Entry Delay Table and Departure Delay Tables. These tables are identical, and contain entries which represent the delays encountered in entering or leaving a port.

Gang-Availability and Cargo Handling Rates Distribution. The entries in these tables represent distributions of gang availability and of rates for handling cargo by commodity type. Although gang availability is a function of time, for the purposes of the computer program, gang availability has been considered as time independent.

Random Velocities of Current. There are four such tables. Each represents a season and direction; Eastbound Winter, Westbound Winter, Eastbound Summer, and Westbound Summer. The entries in these tables are intended to represent the seasonal and directional current velocity changes.

PRACTICALITY AND UTILITY OF SIMULATION

It is hoped that the foregoing discussion, and particularly the section on Structure and Brief Description of the Model, suggests that constructing a model or simulation for steamship operations utilizing a modern large-scale digital computer is an undertaking of considerable moment. This being the case, the question then is: What is the "value" of such a management tool to a steamship operator? Technical Operations was not retained to do the detailed programming and realize this model on a computer for Matson; consequently, meaningful detailed statements concerning utility and worth for this particular simulation necessarily must come from other sources. It is possible, however, to generalize from the work reported on here plus a number of other experiences of our organization, and present some rough estimates on the cost and time involved in achieving operational status

with a simulation system of this size. Finally, a few general statements about how useful such efforts have been to the sponsors is also appropriate.

Cost Estimates. It is useful to divide estimates of time and cost into two rather distinct and separate categories. Initially, basic systems analysis and definition of the problem must be undertaken. To do this requires relatively mature, experienced personnel, who, while they may have no knowledge of steamship operations, do know what digital computers and relatively large-scale simulations are. In addition, they must have the ability to adapt this knowledge and apply it while learning what steamship operations are about.

This initial process referred to is generally called "structuring" the problem. Frequent, if not constant, interaction with the sponsor and his operating people are required so that senior analysts can learn what they must simulate. Experience has shown a very useful mechanism in this connection is to prepare a concept paper in which the merging takes place of technical information on programs and digital simulations with the steamship operation actually being simulated. This phase of the work is most important and must be done carefully since the whole simulation is built on it. To conduct such a preliminary systems analysis and flow charting of a simulation of this size would require between 2 and 4 senior people full-time over about a six-month period. If one accepts \$35,000 per man-year as a reasonable total cost for such services (includes all overhead, indirect benefits, housekeeping, and so forth), such a task involves the expenditure of between \$35,000 and \$70,000.

The second major task, and one which is considerably more costly, involves preparing detailed flow charts of the simulation and programming it for the computer upon which it is to be realized. A model of between 50,000 and 75,000 machine instructions¹⁷ is probably reasonable for a task of this complexity whether the model is time-oriented or event-oriented. Taking between 500 and 1000 machine instructions written and debugged per man-year, and assuming the total cost of a programmer at \$30,000 a year, a reasonable estimate for the realization of a 50,000-word model would be between \$150,000 and \$300,000, and for a 75,000-instruction model or simulation, between \$225,000 and \$450,000. Despite the development of many aids to the programmer, one year is believed to be a conservative estimate of the amount of time required to translate the initial concept to something that has operational capabilities.

¹⁷ The situation gets a bit tricky here because of the increasing use of programming languages or programming systems. These are, in effect, intermediate languages between the programmer and the machine. The more modern of these systems compile machine instructions in a ratio more favorable than one-to-one.

In summary, then, to build a reasonably sophisticated simulation of an activity as complex as the operation of a fleet of ships requires about 18 months: 6 months to define what it is that you want to simulate, and about 12 months to work out the detailed logic and flow diagrams, program the system, debug it, and get it operational. The 6 months' initial effort should cost between \$35,000 and \$70,000 and the realization of the operational product, between \$150,000 and \$450,000.

Usefulness of Simulations. If it is agreed that the estimates presented above are reasonable, as is believed, clearly then the creation of a simulation is an expensive undertaking for a sound prudent management of even the largest of the corporations in the United States. Therefore, it is appropriate to raise real basic questions about the usefulness of such management tools in assisting the decision making process.

One example of the application of simulations of complexity similar to those with which we are concerned here has been fully displayed to the public eye. Reference is made to the use of large-scale digital systems in the forecasting of election results on election eve. Such activities were undertaken on a modest scale in 1958 and were employed by all major networks extensively for the last presidential election in 1960. While these models were constructed for the purpose of forecasting the outcome of an election before all of the vote is counted, it is probably not incorrect to call them simulations, since they seek to simulate the behavior of an electorate (rather than a steamship company) based on past performance and such insight into future behavior as is available.

In a recent study by the management consulting firm, McKinsey and Company,¹⁸ of industrial progress in using the tools of operations research including simulations, the conclusion was reached that there was a much greater potential available to management than was being exploited. That is to say, proven useful techniques are plentiful but fail in implementation, at least in part, because of failure of communication between the analyst developing the tool and the businessman seeking to have the analyst apply it. The report also pointed out that there have been a number of spectacular successes, particularly applications in the oil industry.

During the academic year 1957-1958, a faculty committee at the School of Industrial Management of the Massachusetts Institute of Technology looked into the question of gaming and simulation from the standpoint of their use as analytical tools to assist modern management. The committee examined several large computer driven games as well as a number of simulations then in development. Their

¹⁸ See Reference 3.

conclusions, although off the record, were that at the then level of the state of the art, simulations were an excellent way of carefully defining and thoroughly understanding a problem, were useful as teaching vehicles, but that games and large simulations were still in the technical development stage and had not yet been brought along far enough to be effective aids to management.

Since the time the MIT committee reported to the rest of the faculty, great strides have been made both in developing aids for programmers and in increasing the capacity and power of modern large-scale computing equipment. There is no indication that these strides are retarding. On the contrary, all the evidence points toward continued rapid growth in the development of both technical capabilities required.

It seems appropriate to suggest a further and equally important factor that points toward the "reduction to practice" of large-scale systems to help management on a day-to-day basis. Five years ago, just the technical and scientific problems that had to be overcome were so demanding of skills that models tended to be built for model's sake alone. Often the real problem of the customer suffered for want of solution so that the model building state of the art would advance. Today and on an ever-increasing scale in the future, the "wild-eyed" youths who developed the hardware, pushed through the logical structures for programming systems and developed the mathematical techniques for model building, have become managers themselves. While they may have outgrown their former unique competence, they are a new generation of managers who understand both the strengths and weaknesses of large simulations. In achieving this maturity they present a new opportunity to improve communications between the manager who must make a decision and the technician who has a tool which provides some assistance.

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CONTAINERIZATION AND UNIT LOAD SYSTEM POTENTIALS

S. Lynn Walton

I am sure that you are all familiar with the advantages and disadvantages which are claimed for various types of unit loads. Four of the major areas of potential cost reduction due to unitization which are often mentioned are reduced packaging, lower cargo claims, less time required for the physical handling of cargo, and reduced ship turn-around time. And yet, none of these is an absolute; the relative importance of these and other advantages depends upon the type of unitized system which is adopted.

Assuming that the commercial steamship operator can see areas in which unitization offers potential savings in his operation, he is still faced with the basic question of whether these savings are large enough to justify the required investment in unitization.

There is no general answer to this question, but there are several guiding principles involved: (1) The operator must *analyze his own trade*. (2) He must look at the *entire system* since savings due to unitization which appear in one segment of the transportation system may be offset by additional costs in other parts of the system. (3) He must determine which *variables* of the operation will have the greatest effect upon his choice of system. (4) He must decide upon the *measures of effectiveness* which can best be used in making an economic systems comparison.

These considerations are basic in deciding what kind of unitized system, if any, is best suited to a particular trade.

Incidentally, when I refer to a unitized system, I do not mean to imply that all the cargo moving through that system is containerized or palletized. Certainly few, if any, shipping companies can unitize their entire carryings. One of the very important questions to be decided is what portion of the total cargo moving in the trade can be, or should be, unitized.

I would like to discuss one approach to the question of systems choice—a study which MCTC has done, titled *Maritime Transportation of Unitized Cargo*. It is an examination, from the ship operator's

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point of view, of the maritime segment of the shipper-to-consignee system. It is intended to provide a methodology for economic systems comparison, and it has necessarily been made general enough so that steamship companies whose operations differ considerably can apply it to their individual operating situations.

There are several basic assumptions which underlie the economic comparisons made in our *Cargo Unitization Study*. They are the following: (1) All comparisons are based upon the operation of a single ship between two ports over 350 operating days per year. (2) Terminal ownership and operating expenses are excluded. Only those charges are included which accrue to the movement of general cargo from point of rest in the port of origin to the corresponding point in the port of destination. (3) Cargo is assumed available for each voyage in predetermined quantities. (4) All ships are new construction, built under a 45% construction-differential subsidy. (5) No operating-differential subsidies are included, although the calculations are set up so that the effect of such subsidies can easily be determined. (6) All cargo is assumed suitable for unitization, so as to allow variation in the percentages of total cargo which are unitized. (7) Containers or pallets are owned by the steamship company.

As the basis for economic comparisons, we selected four measures of effectiveness:

1. Cargo Unit Delivery Cost (\$/LT)—out-of-pocket costs, plus depreciation and interest on the money invested by the operator in the ship and in the containers or pallets.

2. Annual Cargo Delivery Capability (LT/year).

3. Required Initial Investment (\$).

4. Required Revenue (\$/LT). This last includes cargo unit delivery cost plus a margin for profit. Our approach was to set a profit level, and then calculate the "required revenue" (\$/LT) which must be realized in order to yield this level under various operating conditions. Probably, the ship operator would approach this problem from another angle; that is, knowing his cargo offerings and ocean tariffs, he can calculate the expected total profit and average profit per ton of cargo carried.

In the study, we assigned different values to each of eight variables, and calculated these four measures of effectiveness for more than 2,900 combinations of values. The variables which showed the more significant effects upon the economic comparisons are: (1-2) cargo handling rates (tons/hour) for both the unitized and break-bulk portions of the cargo; (3) degree of unitization (the percentage of total cargo which is palletized or containerized); (4) voyage distance; and (5) type of unit load (containers or strapped pallets).

In the study we also varied (6) the bale cubic capacity of the ship, (7) sea speed, and (8) the number of longshore shifts (either one or two) worked per port day.

While some of these variables affected the calculations more than others, the important thing is the combined effect of all the variables upon the total maritime transportation segment of the system.

For example, suppose that we increase the bale cubic capacity of the ship. This raises the total construction cost, so the annual expense of depreciation and interest increase. The increased ship capacity will increase the annual cargo delivery capability; and, the fixed annual expense of depreciation and interest will be spread over a greater amount of cargo carried. However, this may or may not result in a lower cargo unit delivery cost, because the profit realized on the additional ship space may not equal the added expense of depreciation and interest on the added space. Whether this is true depends largely on ship utilization. The ship may make the same number of voyages per year, carrying a higher cargo tonnage per year; or it may make fewer voyages per year, carrying the same total tonnage as before; or, if neither the schedule and cargo offerings are sufficiently flexible, the ship may have to make the same number of voyages per year without being able to make full use of the additional space.

This may serve to illustrate that an apparent improvement in one part of a system may not really improve the system as a whole.

The operator who is seriously interested in unitization has a choice of a number of systems. I would like to present a few of the broader conclusions based upon calculations we have made in connection with our *Unitization Study*.

PALLETS AND CONTAINERS VS. THE PRESENT BREAK-BULK SYSTEM

In order to reduce the cargo unit delivery cost of any unitized (or partially unitized) system, the unitized portions of the cargo must be loaded and discharged at higher rates than those achieved by the present break-bulk system.

Where unitization does result in cargo handling rates that are higher than current break-bulk rates, the unitized system generally can produce a reduction in cargo unit delivery cost. That is, in most (but not all) cases, if you can attain a great enough increase in cargo handling rate and if you can unitize a high enough percentage of total cargo, these factors can usually produce a lower cost per ton than is possible under the break-bulk system.

PALLET VS. CONTAINER SYSTEMS

The cargo unit delivery cost is less for a palletized system than for a containerized system under similar conditions of trade if the two systems enjoy approximately equal cargo handling rates. This assumes that (a) containers and pallets are owned and controlled by the ocean carrier; and (b) empty containers and pallets are returned to the initial port of loading.

The main factor which accounts for the consistent per-ton cost advantage of the palletized system is, of course, that the acquisition cost of containers is greater than the initial cost of pallets required to transport any given tonnage of cargo. This is reflected in depreciation and interest charges.

This does not account for the full difference, however. The palletized system may still retain a second advantage: the cargo handling costs and the space required aboard ship for the return of empty pallets to their original port of loading are considerably less than is the case where empty containers must be returned.

Where the cargo unit delivery costs of the containerized and palletized systems are the same, the palletized system is capable of achieving this cost at lower cargo handling rates than the containerized system.

IMPROVED BREAK-BULK SYSTEM

The present break-bulk system is capable of improvement. Studies have been made which show this: for example, our *Cargo Ship Loading Study*, which states that the conventional break-bulk system is operating considerably below the capabilities of the mechanical handling equipment and manpower employed. With this in mind, we made further calculations of cargo unit delivery cost. These calculations show that a relatively small improvement in the cargo handling rates of the break-bulk system makes it competitive with unitized operations which have much higher cargo handling rates.

ROLL-ON, ROLL-OFF SYSTEMS

Finally, I would like to make several comments on the applicability of roll-on, roll-off (RORO) systems. A very important factor in the RORO cost situation is what constitutes the payload.

If general cargo is to be carried, containers or pallets can do the same transportation job at lower costs per ton in practically all circumstances. They can provide the same protection for the cargo and be handled at rates which are generally comparable to the RORO operation, and they permit much better space utilization within the ship.

On the other hand, if the cargo to be carried includes a sufficient quantity of vehicles, then the operator might well consider the benefits of using specialized roll-on, roll-off ships for this cargo only.

The conclusions and observations that I have drawn are of general applicability to a number of different operating situations and trades. So, again, I want to return to the first principle I mentioned in systems choice: Despite the fact that no two steamship companies are confronted with identical situations and problems, it is likely that almost every general cargo carrier can benefit to some extent from a study

which explores the potential of unitization in his own trade. And in doing this, it is necessary for him to examine his entire system, because only through a good systems comparison can he determine which system of unitization he can best use, and just how much of an economic pay-off that system is capable of producing.

Because this *Cargo Unitization Study* confined its analyses to the maritime segment of the shipper-to-consignee system, MCTC embarked on a second study covering the other portions of the system. The latter study, tentatively titled *Inland Transportation of Unitized Ocean Cargo*, is designed to complement the previous one, so that the two, together, cover the full overseas transportation system, beginning with the shipper's loading platform.

Like its predecessor, this study is intended to provide a method for economic comparison, develop cost factors as the basis for comparison, and draw conclusions applicable to general operating situations. These conclusions will show the quantitative effects of certain major variables upon the comparative economics of break-bulk, container, and pallet systems. Furthermore, a consideration of the export transportation system in its entirety permits an examination of cost incidence, and of how the question of who bears certain costs within the system affects the decision as to the desirability of unitizing cargo.

The costs are based upon average cargo stowage factors, rather than upon the characteristics of individual commodities. (An exception has been made in the case of packaging costs, which will be presented in the report on an example basis.) This general approach also permitted us to omit certain items (such as overhead and freight brokerage), since these costs would apply equally to all general cargo, whether it moves as break-bulk or in unitized form.

Table 4 shows the variables of the study and the combinations of values of those variables for which calculations have been made. These variables are: (1) line-haul mode—rail or truck; (2) line-haul distance, taken as 220 miles for truck and 370 miles for rail, corresponding to the average domestic movement distances for the cargo in MCTC's *The SS Warrior*; (3) the point where unitization occurs—shipper's premises, port of origin, or intermediate point; (4) the form in which the cargo is presented for loading aboard ship—break-bulk, palletized, or containerized; (5) container size—either 40'x8'x8' or 20'x8'x8'; and (6) cargo density—40, 29.5, or 20 lb. per cu. ft. These densities correspond to cargo stowage factors of 56, 76, and 112 cu. ft. per long ton, respectively. The first of these average stowage factors is that of the palletized subsistence cargo observed in *The NEAC Study*, the second is that used for oceanborne general cargo in *Maritime Transportation of Unitized Cargo*, and the third approximates the range of special cargoes containerized by several steamship lines on whose operations we have data.

Remember that our purpose is to compare unitized versus break-bulk systems, *not* rail versus truck, and that different line-haul distances have been used for the two modes. Thus, economic comparisons can be made among the 30 parallel truck systems shown in Table 4, or among the corresponding 30 cases computed for rail transport; but no direct comparison of our rail data against our truck data will be valid.

In the past several months, we have been working mainly on the problems of cost incidence and packaging wavings. Both have important implications upon the decision of whether or not to unitize.

The main question in our investigation of cost incidence is how costs and benefits compare for the shipper, the carrier, and other parties such as the forwarder or container leasing firm.

A shift to containers or pallets causes changes in cost incidence. In some cases, each of the parties will realize a decrease in costs; but these cost decreases will represent different percentage reductions in total cost for each of them. In other cases, the costs to one or more of the parties actually increase, although the total system cost is still reduced. In this situation, the least-total-cost system may quite possibly never be adopted unless there is some reapportionment of costs (or revenues) so that each party receives part of the benefit of the overall cost reduction.

Again, emphasis is given to the question of pallet or container ownership. The question is more critical in the case of containers than pallets, because the investment costs are greater. Also, the generation of return cargo is more important to the economics of the container system, because the requirements for both stevedoring and space aboard the ship or vehicle are the same whether the container is full or empty, whereas this is not true in the case of pallets.

However, the same principles of cost incidence apply to potential packaging savings, and to other areas of costs.

Our *NEAC Study* yielded a packaging-differential saving amounting to \$12 per MT in the case of the military subsistence items moving overseas in unit loads. Export packing and crating firms tell us that total export packaging costs run up to several dollars per cu. ft., indicating that the NEAC savings figure is frequently exceeded. So, there is little question that such packaging savings do exist. However, there are other questions: One is what fraction of containerizable cargoes move in large enough volumes to justify their shippers' involvement in a container system. Another is which of these physically containerizable commodities already move in domestic pack, where the costs of claims and of repairing or replacing damaged items are considered to be out-weighted by lower packaging costs, and where no further packaging savings can be achieved through unitization.

Because of the extreme variability of packaging costs and savings

among different commodities, we are treating the packaging question on an example commodity basis. Even on this basis, data collection has its problems. For instance, some shippers are reluctant to divulge the magnitude of the packaging savings that they can realize through unitization. They allege that their own pay-off would be small compared with the savings which could be achieved in handling and transporting the shipments, and are apparently holding out to see how much of a share of the carrier's possible savings they can get.

This brings us full circle, back to cost incidence. Apparently, these shippers are not satisfied to get *a* share of the pay-off from containers through packaging savings; rather, they are seeking what they consider a more *equitable* share of the total savings which accrue to carrier, as well.

The forthcoming report on this study is intended as a management tool. It is not intended, in any sense, to provide a single, general answer or a "cure-all". No shipper or carrier can delegate his operating decisions. However, what this report *is* intended to do, is to provide management with more complete economic decision criteria for determining the comparative economics of unitization.

HOW A U. S. FLAG OPERATOR ASSISTS U. S. EXPORTERS TO EXPAND IN ITS TRADE ROUTE

Capt. L. A. Renehan

At a time when the nation is concerned with a serious balance of payment problem and critics of the merchant marine subsidy program are heard once more, it is increasingly important for American steamship lines to offer significant assistance to the program of increased exports. The lines can do this quite simply and effectively by broader adaptation of trade development, a service already performed to some extent by most of them.

Trade development is not a new idea in liner shipping. In fact, it was in earlier days practiced on a much larger scale by the pioneering shipowners, who were perhaps more conscious of their place in world trade than we are today. It may be that we have become so deeply involved with our operational problems, rising costs, and effects of keen competition in the scramble for existing cargoes that we are overlooking the potential tonnage that can be created for American importers and exporters. It is time for steamship traffic men to make a closer study of the overseas areas they serve to determine a role for themselves in which they not only operate ships but act also as instruments of trade.

INFLUENCES OF THE EUROPEAN COMMON MARKET AND THE NEWLY INDEPENDENT NATIONS

A remarkable transformation is now taking place in world trade. The effects of the Common Market, the broad industrialization of Japan, and the emergence of new, independent nations will be felt by buyers and sellers the world over. Increased purchasing power and improved standards of living will mean that wholesale purchases previously made by a few will be made by many. When the number of buyers increases in a free market, the number of vendors will increase also. This means new customers for ocean carriers. Freight traffic men must broaden their scope to realize the importance of this new business and the assistance they can give in its development.

The immediate attraction of this idea is that its implementation

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requires very little reorganizing, staff expansion or increased expense. The framework of a trade development program already exists in every liner operation. The know-how is there; all that is required is for it to be organized and merchandized.

TRADE DEVELOPMENT SERVICES HELP SMALL AND MEDIUM SIZE BUSINESS

A glance at the statistics of our export trade will show the need for this activity and the section of our commerce where it will be most useful. The studies of the export expansion committees reveal that only 12,000 companies out of approximately 287,000 American manufacturers are engaged in the export business today. This is 4 per cent and, of this total, the overwhelming majority are large companies. The U. S. Department of Commerce classifies companies with more than 5,000 employees as "large," with 500 to 5,000 as "medium," and less than 500 employees as "small" business. Obviously, from these figures it is evident that large companies are competent to enlarge their own export business. As international organizations, they have the staff to do their own trade development. Small and medium size companies, on the other hand, can benefit immeasurably from an effective steamship trade development program.

Let us consider the situation of a medium-size office furniture manufacturer in the mid-West. Suppose he is one of the small percentage of manufacturers engaged in exporting. Due to budgetary or staff limitations, his export activity is limited to a few large market areas, say, the large cities of England and France. He would like, however, to sell his product in South America, India, Africa, and Southeast Asia but the prospect of sending a man on a sales and market study trip to one of these places discourages his ideas about sales expansion. Furthermore, he feels rightfully that because of the unique peculiarities of each of these remote and unfamiliar areas, it is highly improbable that a newcomer could make an effective study during a brief visit. The result is that most medium and almost all small businesses decide against an export effort in these regions, yet, it is these companies who can benefit most from trade development.

SOURCES OF INFORMATION AVAILABLE TO THE POTENTIAL EXPORTER

When entering an export market or expanding to a new area, the manufacturer usually turns to the government and the U. S. Department of Commerce, the best source of available export information. The Bureau of International Business Operations can provide excellent market surveys, trade statistics and World Trade Directory reports which contain pertinent information on foreign markets. As valuable as this information is, however, it must be supplemented by contact with a distributor or sales representative abroad. At this

point most steamship lines are able to offer a personal contact through their representatives in overseas offices, an invaluable service which could gain grateful customers for them. The amount of additional work involved is not overwhelming; most of the foreign representatives are presently making sales calls on the importers and exporters in their areas. They need merely guidance and direction to implement trade development work. This is really a matter of adapting marketing to shipping.

REQUIREMENTS FOR A STEAMSHIP MARKETING SERVICE

As previously stated, this is not a revolutionary concept. Many steamship lines are offering this service, or could do so with only small changes in present procedures. The first and cardinal requirement is knowledge of the overseas market, the nucleus of trade development. Much time and unnecessary effort are avoided if the staff in the U. S. can advise at the outset whether or not a market exists for a product. In many parts of the world there is a need for manufactured goods, but not a market; an elementary but important and necessary difference. Adjustments, however slight, are required for most products to suit particular requirements of foreign buyers. Often packaging must be specialized, and routing to an interior destination sometimes requires explanation. Most liner operators have this information available because their executives have often lived in the countries which the company serves.

The second requirement is a coordinated network of overseas offices or agencies properly instructed in the sales worth of trade development. The profit value of this work will become apparent and their cooperation is usually obtained easily. It is important that objectives and procedures be carefully explained and understood. As in any sales project, wasted energy, either in the wrong direction or on a fruitless lead, brings discouragement.

The third ingredient of a successful trade development program is an efficient system for processing and following up each lead. This is detail work that requires attention. A system must be planned and carefully followed, for good will is destroyed by neglected correspondence.

A GENUINE TRADE SERVICE, NOT "PUBLICITY"

At the outset, the steamship operator must avoid the temptation to do "publicity" trade development; he must differentiate between this and a genuine traffic marketing service. "Publicity" trade development is a public relations and advertising tactic which may be adopted without increasing office overhead. It originates as an advertising man's dream whereby he prepares exciting and dramatic advertisements showing the opportunities for trade and sales in lucra-

tive overseas markets and how his client can help to gain them. At the same time, by indicating that this particular steamship line has proficiency and years of experience in the geographical area, he enhances the prestige of the carrier. Responses from this advertising are passed on to foreign offices where they are received with a degree of enthusiasm that varies with the individual managers. Usually, the commercial register of local business houses is consulted, and the home office is sent a list of names of firms which import products of a type similar to that of the inquiring company. These names are then sent to the potential exporter who writes duly to each company, hopeful that it will be interested in his product. Almost without exception, he is disappointed, for in 99 per cent of the cases, the letter is not even acknowledged. There has been no personal contact; therefore, the lead dies, another potential exporter becomes discouraged, and no new business has been developed for the steamship operator.

THE MECHANICS OF TRADE DEVELOPMENT

The same advertising means are used to announce a real trade development service. Interesting and appealing advertisements can be prepared around the need for greater American participation in exports to foreign markets. They should be placed in media read by all manufacturers, not merely those already engaged in exporting.

The response to this advertising will be interesting. The number and variety of companies in this country which do have an interest in entering the export field probably will come as a surprise. It will be necessary to classify the inquiries to determine the degree of practicality of the product offered for use in the area served by the respective lines. For example, it is unlikely that specialized electronic equipment will find a market in Tropical Africa. This is the first screening process in which a good working knowledge of the area served by the line becomes useful.

In responding to an advertisement the inquirer rarely provides sufficient satisfactory information to develop a trade lead. It is, therefore, necessary to have a questionnaire available which should be sent to him to be completed and to be used as the basis of preparation of the lead. At the same time, descriptive brochures of the product and an export price should be obtained. The latter is of particular importance for inevitably an overseas distributor is interested first of all in the price of the product offered.

An advertiser must be aware of his responsibilities when making an offer in the public press. When you state that you will provide a service free of charge, you must anticipate that readers, involved in almost any occupation in almost any part of the world, will respond. These people may not export a product which is shipped by ocean-going vessels and they may not export through a port located in the

area served by the line. It will, therefore, be necessary for a policy decision to be made concerning inquiries from companies which, even if business were to be developed, would not be your customers. Exporters on the West Coast and the Gulf, and even in Alaska or Hawaii, may accept the offer of your services and, although your ships may load only in East Coast ports, you will be faced with the decision of whether or not to assist them in the overseas marketplace. We have decided that it is good business to offer the service to all comers, even though we may never carry an ounce of their cargo.

The next decision, also based on knowledge of the overseas market, is to which overseas offices of the line the lead should be distributed. It would be easy enough to simply distribute the inquiries to every overseas office. However, this would create an unnecessary burden on those small offices in remote areas where the staff is adequate for only the most feasible of the inquiries. Each lead should be distributed by a yardstick of practical application in the individual overseas area. For example, in Africa we find that highly refined products, such as complex communication or office equipment, may have a ready market in the modern highly industrialized Republic of South Africa. Certainly, it would never send a lead for this product to a less developed area. Furthermore, such things as hand tools, common textiles and simple glassware are produced in sufficient quantity in the Republic of South Africa to satisfy their entire home market.

We turn now to the overseas office. First of all, an education program must be conducted to satisfactorily explain the objectives of the trade development program, the procedures to be followed, and the importance of the work to the line and to the foreign agent. As described earlier, the success or failure of this work depends on the effective cooperation of the personnel in the overseas offices. As in every operation where several thousand miles of ocean separate the principals involved, a continuous follow-up is required. A good system which keeps track of each lead as it proceeds through the various offices is an absolute must.

Part of the education of the overseas office is the need for recommending reliable distributors. This may appear to be perfectly obvious, but it is a constant source of annoyance to find that many of the foreign companies anxious to obtain the representation of American firms are not reputable, credit-worthy organizations. This qualification is easily checked through the local banks and the World Trade Directory records of the American Embassy or Consulate General.

Once it has been decided to which overseas offices the lead would be distributed, it is then necessary to send a brief, complete description of the product. Unfortunately, most descriptive literature provided by manufacturers is of excessive weight and bulk for feasible air mail delivery. In some ocean services, surface mail requires a

month of transit time. You must then decide whether the descriptive literature is necessary and, if not, you yourself must prepare an adequate description which may be distributed in an air mail letter.

The third stage, and the most satisfactory one, is that of providing the requested information to the firm which originated the lead. To the surprise of most of us, the export business does not materialize immediately after the development work has been done. Although satisfactory contact may be established between the American exporter and an overseas agent, interested and able to handle his product, there is still need for missionary work. Actually, this is outside of the field of trade development. At this point, the regular sales department takes over the account and provides the necessary additional inducements to the exporter to pursue the business.

To sum up, the thoughts expressed herein concerning Trade Development are really a matter of bringing into the shipping industry the marketing sales approach which is now practiced by all alert American companies. The efforts of Sales Departments of most liner operators, as indicated by the term "solicitors" which is commonly used to describe them, have always shown a disproportionate interest in existing business. In many instances, the majority of them make frequent calls on a familiar list of shippers to the extent that they have stopped being salesmen and are really "order takers." I do not wish to indicate by this that the old customers are not important; they are certainly of prime importance and should not be neglected. At the same time, however, they should be exposed to the new opportunities that are opening in overseas markets and a broad approach must be made to that vast number of potential exporters who have not yet entered the remunerative field of export.

THE COMMON MARKET AND U.S. MERCHANT MARINE

Frank L. Barton

Through the centuries, great armies marched across Europe attempting to enforce unity under the hegemony of imperial Rome, revolutionary Paris, the Thousand Year Reich and, most recently, Communist Moscow. Religious crusaders, too, tried to impose upon diverse peoples and cultures a common "European" consciousness. Yet, European unity, borne of coercion, has disintegrated.

Today, however, Europe west of the Iron Curtain is moving toward unity, propelled by an idea backed voluntarily by free men and nations. What many call the New Europe is abuilding around the European Economic Community, better known as the Common Market. France, West Germany, Italy, Belgium, Luxembourg and the Netherlands are steadily reducing trade restrictions among themselves, toward the eventual goal of completely free movement of men, goods and capital, and are erecting a common tariff wall against outsiders.

It has long been recognized that the existence of national states tends to reduce the world-wide efficiency of allocation of resources as a result of the variety of obstacles that states tend to impose on the international flow of goods, labor, and capital. Economic integration on the international plane may be viewed as an effort to mitigate this situation by reducing the economic significance of political boundaries. This effort may be pursued through the General Agreement on Tariffs and Trade or the International Monetary Fund approach of seeking to reduce trade and exchange restrictions on a world-wide basis. Or, it may be pursued in more ambitious ways by smaller groups of countries acting on a regional basis.

EARLY POSTWAR INTERNATIONAL AGREEMENTS

The GATT and IMF approach to economic integration seemed peculiarly unsuited to the conditions that existed after World War II. Production was widely depressed as a result of wartime disruption and physical shortages. Fiscal and monetary policies were uncoordinated. Prices and costs were widely controlled by governments and

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currencies were inconvertible. Under these circumstances, the real impediments to economic integration were not so much the existence of high tariffs but the divergent economic policies and systems of control adopted by national governments necessitating a network of quantitative and exchange restrictions.

Although the GATT and IMF were designed to outlaw such restrictions under "normal" circumstances, it appeared likely that such global commitments would remain a dead letter for a long time. There were even some who felt that Europe was suffering from structural difficulties that would tend to result in a permanent dollar shortage and a need for restriction of this currency. It was this disintegration that characterized a wide area of the world trading community that provided the special economic impetus behind various postwar moves toward European integration.

On the economic side, the postwar moves were a response to the apparent weakness of Europe as reflected in the general dollar shortage and to the constricting effects of bilateralism on production and trade. Regional arrangements were viewed as a means of gradually injecting competitive forces in countries that seemed bent on protecting not only domestic industry but highly overvalued exchange rates as well. One step in this direction was the European Economic Community.

EEC—STEP TOWARD POLITICAL AND ECONOMIC UNION

The European Economic Community was established by the Rome Treaty of 1957 and became effective January 1, 1959. It is regarded by many as one step toward the complete political and economic integration of six countries: Belgium, Western Germany, France, Italy, Luxembourg, and the Netherlands. It provides for the progressive abolition of all trade restrictions among the member countries, for the unification of their tariffs and trade policies toward the outside world, for the greater mobility of their labor and capital resources, and for some degree of coordination of the member countries' monetary and economic management. All this is to be accomplished gradually, over a twelve to fifteen year period.

Some members of the much looser European Free Trade Association consisting of the "Outer Seven", particularly the United Kingdom and Norway, recently decided to open negotiations with a view to joining or to associating themselves in varying degrees with the EEC. If such participation materializes, EEC, changing its character from a predominantly Continental area, probably would be very much interested in integrating maritime and air transportation.

The *Rome Treaty* provides for the inauguration of a common transportation policy which, in the long run, is indeed nearly indispensable for the establishment of the Common Market and the gradual assimilation

lation of the economic policies of its members. The Treaty, however, contains only a few rules on common transportation policy since the original partners were not able to reach agreement in this area when the Treaty was signed. It was left to the organs of the EEC, notably the Assembly, Council and Commission, to supplement Article 74 of the Treaty. The Commission is to propose the full body of transportation rules, to consult the Economic and Social Committee and the Assembly and then to submit the text to the Council of EEC, where the final decision rests.

At the present time, the Commission considers it particularly urgent that agreement be reached on the following questions:

(1) A standardized international contract of rules for roads and inland waterways should be formulated. (International transport by rail is regulated in Europe in accordance with the Berne Conventions of October 1924.)

(2) The granting of free and unhampered passage to international road traffic of the EEC and the liberalization of the measures taken by individual countries to limit international road traffic should be agreed upon.

(3) The Commission recommends the unification of rate-making throughout the area. At present, rates are subject only in part to demand and supply and are subject to various degrees of governmental interference. The Commission also considers it advisable to establish maximum and minimum tariffs so that the carriers are free to adapt their rates to market conditions; such maximum rates would prevent misuse of monopoly positions and tendencies toward price increases during an economic boom, while minimum tariffs would prevent ruinous competition. The Commission is of the opinion that such a system could function only if publication of tariffs were mandatory.

TOWARD A COMMON TRANSPORT POLICY

Early this summer (1962) the EEC Council will discuss a voluminous Commission "Memorandum on the Orientation to be Given to the Common Transport Policy". The memorandum, sent to the Council and other Community institutions, does not contain recommendations or proposals in the sense that the Treaty does. Rather, it is a discussion of the elements of a common transport policy with a view to providing a basis for formulation of recommendations by the Commission to the Council.

It appears that discussions will concern ideas primarily on the limits of freedom of carriers and consumers to fix transport rates and on the Government restrictions on the entry of foreign carriers to national transport. Discussion will also arise over the difference of opinion within the Community on the legal question as to whether the general Treaty provisions apply to all transport sectors, including air

and maritime transport and pipelines. The latter three are excluded from, or not specifically mentioned as being covered by, the Transport Title of the Treaty.

In this connection it should be noted that last fall, the Commission submitted to the Council its argument that the general Treaty rules should apply to air and maritime transport despite the absence of a decision, under Article 84-2, that the Transport Title apply to these modes of transport. Some critics believe that the air and sea transport question—(modes of transport) not now in the memorandum—unnecessarily caused apprehensions which may now lead to troublesome hesitation about common policy matters.

THE IMPACT OF EEC ON U. S. ECONOMY

Let us now turn from Common Market transportation policy to the possible impact of the EEC on our own economy. The markets of the six countries should be completely integrated by the early 1970's. In other words, there would be a Common Market comprising an area one-seventh that of the United States, whose present population is almost as great as ours but whose combined gross national product is now only slightly over half that of the United States. The creation of such a large integrated market is expected to make possible, through increased competition, the use of better productive methods in the member countries. This would enhance productivity and raise standards of living, which today are less than two-thirds of this country's, though growing at a rate faster than ours.

How much productivity is likely to increase, or how much faster it is likely to grow, is impossible to predict. All I can say is that there will be improvement, possibly substantial improvement, and that such improvement will not result solely or even primarily from the diversion of trade from third countries.

What effect will all this have on the United States? First, it is clear that an improvement in the economic position of our allies is of advantage to us. Until recently, the U. S. Government found it worthwhile to extend economic aid to these countries, despite the fact that every dollar they received meant the sacrifice of a dollar to us. An improvement in their economic position resulting from the formation of the Common Market will not involve this dollar-for-dollar relationship, partly because the United States would share with other third countries any possible losses inflicted on their position, partly because, as argued earlier, such losses are bound to be smaller than the gains to the Common Market countries if, indeed, there are any losses at all. These considerations must form the background against which all further discussion turns in many parts of Europe, the Far East, and Latin America.

When we come to examine the possible effects of the Common Mar-

ket on the U. S. economy, we must distinguish between its effects on individual business corporations and its effects on our balance of payments, because the two are not always affected similarly. As regards the balance of payments, it will be improved on some counts, worsened on others. It is difficult to say which will prevail. The immediate effects are likely to be unfavorable; but, in the long run, when the Community is fully established, the favorable effects may indeed offset the unfavorable or may even outweigh them.

The most direct and immediate effect of the Common Market on the balance of payments will be the diversion of some of the member countries' demand from American and other foreign exports to the exports of fellow-member states. This will come about as tariffs and quotas on imports from fellow members are lowered while restrictions on imports from other countries are retained. Such trade diversion and a resultant reduction in U. S. exports to the Common Market countries is almost certain to happen but is not likely to be very important. The products affected are only those that the European countries can produce themselves in sufficient quantities, which means primarily manufactures and coal and steel.

Many American business firms, anticipating stiffer competition from, say, German firms in France and from French firms in Germany, are laying plans to meet this threat by establishing subsidiaries within the Common Market area itself. From their point of view, this may well be no less or even more profitable than the continued export of U. S.-made products; but it would not offset the effects of diminished U. S. exports on the U. S. balance of payments. Indeed, the export of capital implied by the establishment or buying-up of European subsidiaries would constitute a further drain on our balance of payments; although the sums involved under this head again are not very great.

Another factor capable of affecting U. S. exports is the projected replacement of the member countries' tariffs by a uniform Common Market system of duties on imports from the outside world. The unified tariff of the EEC will be the arithmetical average of the present tariffs of the member countries, which means that high-tariff countries like France and Italy will have lower tariffs, while a low-tariff country like Western Germany will have higher ones than at present.

More important potentially, in its effects on U. S. trade, than the EEC tariff and quota policies will be the enhanced efficiency of European industry that is likely to result from the larger size of the Common Market. It is generally feared that this will turn European producers into considerably more formidable competitors of American industry, in Europe, in third countries, and in the American market itself. Even today, before the Common Market has had time to exert

its influence, European industries are already outcompeting American concerns in many parts of Europe, the Far East, and Latin America.

Increased efficiency, however, renders an industry more competitive only if it lowers prices. If the increase in productivity is accompanied, as it is so often, by a proportionate increase in wages and other earnings, prices remain unchanged. If this should happen in the EEC, not only would their exports fail to rise but, instead, the higher income of Common Market consumers would raise their demand for imports, among them U. S. imports. An increase in productivity, therefore, can affect the balance of payments either way, depending on whether it primarily lowers prices or raises earnings.

This, in turn, depends largely on the bargaining power of labor unions, the pricing policies of business, and the fiscal and monetary policies of governments. In other words, productivity is only one among the many factors that determine relative price levels and with it relative competitiveness. The crucial question is whether inflationary trends will be smaller in the Common Market countries than in the United States, a difficult question to answer. Past experience shows faster price increases in the Common Market area than in the United States—much faster in France, a little faster in Germany, Italy, and Holland, and a little lower in Benelux. Establishment of the Common Market, however, may well change the basic conditions for all this. My guess, though a very tentative one, is that, for a while at least, prices in the EEC may stay lower and rise more slowly than in the United States. The increase in competition among the member countries likely to result from the integration of their markets should exert a powerful downward pressure on prices, especially in the beginning and before labor unions begin to form supranational bargaining units.

HOW U. S. BUSINESS PLANS TO OPERATE

Many American businessmen seem to share this view, for plans to establish subsidiaries within the EEC countries are being laid, not only by firms that fear the closing of the Common Market to their exports but by many others as well. They want to benefit by the combination of low European wages and the scope for efficient large-scale production which, in many fields, will be opened up for the first time by the creation of the EEC. They hope to sell their European-made products not only within the Common Market itself but in third markets and the United States, as well. American businesses, with their established good will, distribution, and servicing network within the United States, are in the best position to import European-made products into this country; and, if the development of the EEC does increase European exports to the United States, American-owned corporations may well be among the main beneficiaries.

In an analysis by the Chase Manhattan Bank of the possible impact

of the Common Market on U. S. foreign trade, it was ascertained that three-fourths of U. S. exports to Europe are raw materials and food products. A large percentage of these will continue to enter Europe duty free or at very low duties.

About 24 per cent of U. S. exports to the Free Trade Area consist of food and tobacco. Tariffs on these goods vary widely, but they are not among the highest for most items shipped by the United States. Europe's food deficit is more likely to grow than decline, and this may be particularly true of foods such as bulk grains, as well as leaf tobacco, important U. S. exports. Thus, shipments from the U. S. to Europe may actually increase as the European market expands.

Another 31 per cent of U. S. exports to the Area represent raw materials: ores, textile fibers, non-mineral oils and raw chemicals. These products generally carry very low duties and sales of some of them are likely to increase.

A further 19 per cent of European imports from the U. S. are in the form of coal and some petroleum products which are also subject to low tariffs. The future of U. S. exports in this field depends more on how soon and how much oil is developed in Europe and its territories, and the extent to which nuclear energy supplants conventional energy. The growth in energy use in Europe has been at the rate of 8 per cent per year since 1950. It promises to be rapid in the future, so, even with additional oil and nuclear energy, U. S. coal exports may be important for some time to come.

About 26 per cent of U. S. exports to Europe consist of manufactures, particularly machinery and chemicals. Nearly all of these categories will have substantial tariffs against them, while most internal European tariffs will drop to zero. As a result, many American producers will find European competition increasingly difficult to meet, and certain products which are now successfully exported may eventually cease to move there.

MORE EUROPEAN COMPETITION IN THIRD MARKETS

As the Common Market develops, it appears probable that Europe will also become a more potent competitor with American exports in third markets. Again, such competition will center largely in products of a more standardized nature on which lower costs may be realized through larger-scale production. Certain chemicals, steel products, electrical equipment and automobiles are examples. European producers, by reason of lower wage rates, are strong competitors in many of these fields. The development of the new European market will intensify this competition, and American producers must even be alert to the possibility that their European counterparts will make further incursions into the American home market.

This heavier competition in third markets and at home will be

selective in nature. The total of American exports to Latin America, Canada, and Asia does not appear likely to suffer. As with Europe, total exports will be governed by dollar availability. But the composition of U. S. exports will be affected.

In the long run, those U. S. exports which are unique in some respects will fare best—unique in performance, design or cost. Such is the case even today, from drugs to tractors to atomic reactors. As has been pointed out, American business, at present, commands one significant advantage in this regard—the volume and variety of its applied research which is unmatched anywhere in the world. Technical progress should be rapid within the United States in coming years, and it will be exportable.

Let us now turn to the problem of the effect of the Common Market on our foreign economic policy. How free competition, cartels, and government regulation will be mixed in the organization of the western European economy is not yet determined. The planned elimination of tariffs among the Six, and we hope their substantial reduction or elimination among the Seventeen, of Organization for Economic Cooperation and Development, however, is a major step toward free markets. But it is likely that there will be some reaction to this step in the form of private market sharing and price setting arrangements. The Committee for Economic Development feels that there is a substantial body of European opinion that sees as the chief benefit of the Common Market the opportunity to establish government economic planning and direction at a supranational level. The course of economic relations between Europe and the rest of the world will be influenced greatly by the mixture of freedom and regulation in European economic policy.

The idea that the route to economic development is through the creation of an enlarged, protected market is not confined to Europe. Regionalism is gaining in Latin America, the Middle East and elsewhere. Its future development will be influenced strongly by the European experiment.

THE ROLE OF U. S. FOREIGN ECONOMIC POLICY

The United States cannot determine the economic policy of the world and should not regard itself as obliged to lay down blueprints for the organization of the world economy to which others should conform. But, the United States is half of the Free World economy. Our behavior and policy are a major part of the environment to which the rest of the world adjusts. We cannot avoid considering the effects of our own policy upon others. The CED feels that a sound principle by which United States policy should be guided is to be conducted in ways that would maximize opportunities for all national economies to develop by sharing in a world-wide free economic system.

It is commonplace today to say that American foreign economic policy should be an integral part of general foreign policy and should be designed to support our national strategy. This is, however, a concept of very recent origin. It is by no means accepted generally in public attitudes or reflected in all branches of national life, especially legislative action, which formulate foreign economic policy.

Our national historic tradition, back to the American Revolution, is rather the reverse of this concept, much of foreign policy having been designed primarily to serve national economic interest. Obvious examples are the right to manufacture for ourselves, insistence on freedom of the seas in peace and war, and maintenance of an open door for American trade and investment.

Among the present array of foreign economic aims, foreign aid is one which reflects a deliberate attempt at serving the broader objectives of foreign policy. On the other hand, policies affecting trade, agriculture, and shipping are often heavily influenced by special domestic interests which seek protection from imports or subsidy of exports.

THE TRADE EXPANSION ACT OF THE COMMON MARKET

From the foregoing it is evident that the Common Market and the American reaction, as exemplified by the Administration's *Trade Expansion Act of 1962* will provide an environment of challenge for the U. S. Merchant Marine in the years ahead. If the theory behind the Common Market and our foreign trade program is sound, and I believe it is, and if these adjustments in the Free World economy can be made without any major disintegrating effects, then there should follow a steady expansion of international trade.

The *Trade Expansion Act of 1962* (HR 9900) introduced in the House on January 25, 1962, provides the following:

1. A general authority to reduce existing tariffs by 50 per cent in reciprocal negotiations. It would be our intention to employ a variety of techniques in exercising this authority, including negotiations on broad categories or subcategories of products.

2. A special authority, to be used in negotiating with the EEC, to reduce or eliminate all tariffs on those groups of products where the United States and the EEC together account for 80 per cent or more of world trade in a representative period.

3. Special authority to reduce or eliminate all duties and other restrictions on the importation of tropical agricultural and forestry products supplied by friendly less developed countries and not produced here in any significant quantity, if our action is taken in concert with similar action by the Common Market.

4. The four basic stages of the traditional "peril point" procedures and safeguards will be retained and improved:

The President will refer to the Tariff Commission the list of proposed items for negotiations.

The Tariff Commission will conduct hearings to determine the effect of concessions on these products.

The Commission will make a report to the President, specifically based, as such reports are based now, upon its findings of how new imports might lead to the idling of productive facilities, the inability of domestic producers to operate at a profit and the unemployment of workers as the result of anticipated reductions in duties.

The President will report to the Congress on his action after completion of the negotiations. The present arrangements will be substantially improved, however, since both the Tariff Commission recommendation and the President's report would be broader than a bare determination of specific peril points. This should enable us to make much more informed use of these recommendations than has been true in the past.

5. Companies, farmers and workers who suffer damage from increased foreign import competition will be assisted in their efforts to adjust to that competition.

6. Any worker or group of workers unemployed or underemployed as a result of increased imports would, under this bill, be eligible for the following forms of assistance:

a. Readjustment allowances providing as much as 65 per cent of the individual's average weekly wage for up to 52 weeks for all workers, and for as many as 13 additional weeks for workers over 60, with unemployment insurance benefits deducted from such allowances to the extent available.

b. Vocational education and training assistance to develop higher and different skills.

c. Financial assistance for those who cannot find work in their present community to relocate to a different place in the United States where suitable employment is available.

7. For a businessman or farmer adversely affected by imports, there should be available:

a. Technical information, advice and consultation to help plan and implement an attack on the problem.

b. Tax benefits to encourage modernization and diversification.

c. Loan guarantees and loans otherwise not commercially available to aid modernization and diversification.

8. Authority to grant temporary tariff relief will remain available to assist those industries injured by a sudden influx of goods under revised tariffs. But the accent is on "adjustment" more than "assistance". This expansion of trade, engendered by the desirability of working toward the goal of an optimum allocation of the resources of the world, should accrue to the benefit of all merchant shipping. Since

at the present time U. S. flag liners have the physical capacity to carry much more import and export cargo, the outlook augurs well for our subsidized shipping.

I feel that our shipping industry can get a large share of this increasing volume of cargo through the practice of standard business promotional and solicitation efforts. With the international transportation policy of the Common Market still an undecided issue, it would probably be in the long run interest of our merchant marine for the Government not to advocate those protectionist measures which inevitably result in adverse reaction and retaliation abroad and which, in turn, lead to more official control. Conflicting and countervailing regulations of this type in the long run serve more to strangle than to stimulate world commerce.

In conclusion, I would like to emphasize the need for all of us—in both the maritime industry and the Government—to keep ourselves informed of developments in the Common Market so that we can meet the challenge which this impressive economic experiment affords us.

CONFERENCE STANDARDS AND RATE POLICIES

Julian H. Singman

My views on conference standards and rate policies are founded on my recent experience as Acting Deputy Administrator of the Maritime Administration and upon more than three years of study and investigation while with the staff of the House Antitrust Subcommittee, often called the Celler Committee, after its chairman, Representative Emanuel Celler of New York. That committee's report on the ocean freight industry, known as *House Report No. 1419* of the 87th Congress, contains probably the most thorough exposition of current conference rate standards and policies that is available.

In discussing the conference rate structure, I shall use three approaches: the historical development of the conference system, its rate policies, and its regulation by Government; the current state of flux in both industry and Government and the conditions leading to it; and my own tentative suggestions as to steps that might help the American Merchant Marine and the conference system to survive the coming difficult years.

HISTORY OF THE CONFERENCE SYSTEM

The substitution of steam-powered for wind-driven ships in the 19th century and the economic changes accompanying that transition ushered in a new era for the ocean freight industry that ultimately gave rise to the conference system. In the age of sailing ships, cargo vessels generally departed only when full. Sailing dates were unpredictable; arrival dates even more so. Ocean transportation was one of the speculative elements of commercial life. With the advent of steam-propelled ships and the increase in transoceanic trade, companies were able to provide the merchant swifter service on a regularized schedule, thereby permitting him to gauge his overseas shipments more accurately according to market demand.

This transformation cast novel burdens upon the shipowner. His rates for the first time had to be set at a level high enough to cover the risk that his vessel might be forced to leave port with only a partial load in order to conform to a fixed sailing date. Moreover, he

Julian H. Singman, Landis, Cohen and Singman.

was faced with more vigorous competition, since steam made the oceans "smaller" and more easily transnavigated.

The second half of the 19th century witnessed a great expansion in the amount of steam tonnage. The supply of cargo space became greater than the demand, and a period of severe competition followed. Rates fell, and some lines ceased operations. Others began to band together and form associations known as "conferences," for the purpose of stabilizing rates and regulating or restricting competition in a given trade. According to available records, the first of these associations was formed in August 1875 by steamship lines engaged in the trade from Calcutta to the United Kingdom and was known as the Calcutta Conference.

In the day of the sailing vessel, it had been customary for ship-owners to grant rebates or other concessions to large shippers in order to gain their exclusive patronage. The Calcutta Conference, hoping to stabilize rates completely, at first attempted to establish and maintain equal rates for all shippers and to refrain from dispensing preferential treatment. However, the shippers who had formerly enjoyed favored status objected strenuously. Some manifested their discontent by patronizing nonconference lines.

The conference members, in turn, sought to devise means for capturing the exclusive business of these shippers by "tying" them to the conference lines. The deferred rebate evolved as a means of implementing this strategy. The recipient of an ordinary rebate is recompensed, usually in the form of a discount, in exchange for his exclusive patronage throughout a stated period. The deferred rebate, which was to be paid for a given period of exclusive patronage, did not actually become payable until and unless the shipper continued to patronize conference lines exclusively for an additional specified period beyond that for which he had earned the rebate. Thus, the shipper could stop patronizing conference lines only at the cost of losing a previously earned deferred rebate in addition to losing the advantage of a current rebate.

This deferred rebate was frequently employed by conferences because of its effectiveness as a "tie." That the lines were able to demand and obtain this kind of commitment is indicative of the increased power that they derived from the conference system.

After 1875, the cartelization of the ocean freight industry proceeded rapidly as the conference system was introduced in one trade after another and the conferences and individual member lines, in turn, allocated world markets through mutual agreements to respect each other's territory. By the time the operations and activities of the conferences came under governmental scrutiny both in the United States and in Great Britain, the conference system was a *fait accompli* on most of the world's trade routes.

In Britain, the Royal Commission on Shipping Rings was appointed in 1906 in response to complaints by commercial interests that the conferences engaged in discriminatory practices and charged excessive rates. Three years later, the Commission presented both a majority and a minority report. The majority attributed to the conference system a number of signal advantages including regularity of sailings, stability of rates, and improved service; it recognized, however, that the system conferred upon the conference members the monopoly power to establish a higher level of rates than would have been possible but for the system.

The observations and conclusions of the minority report concerning the conference system were in sharp contrast to those of the majority. The minority emphasized the abuses inherent in the system, observing that the monopoly power of the conference to charge what the traffic will bear "is a power which with safety cannot, if wholly uncontrolled, be intrusted to a shipping company or any private body of persons who are carrying on a business with a view to their own profit."

Following the report of the British Royal Commission which accomplished virtually nothing, interest was awakened in the United States to the problems posed by shipping conferences. In 1912, the House of Representatives authorized an investigation of shipping combinations by its Committee on Merchant Marine and Fisheries, then under the chairmanship of Representative Joshua W. Alexander of Missouri. After extensive hearings and collection of data, a report was issued in February 1914.

With a few exceptions, the *Alexander Report* concluded that the established shipping lines plying foreign trade routes to and from American ports were parties to restrictive written agreements or gentlemen's understandings and in many instances were affiliated in shipping conferences. Whatever the form, it was found that the object of these arrangements was twofold: (1) regulation of competition between the lines which were parties to the agreement or conference; and (2) control or elimination of competition from lines which were nonparticipants.

An impressive variety of devices were employed to meet the first objective—the rationalization of competition *inter se*—and these the *Alexander Report* catalogued in detail. Pooling and rate fixing were characteristic. The contracting lines would often set either fixed or minimum rates, and in a number of trade routes a system of rate leadership prevailed, even in the absence of formalized agreements. Territorial divisions of the market took the form of reservations of traffic in and out of certain ports to each of the lines joining in the arrangement, or of mutual agreements not to extend service into recognized spheres of influence. The reach of such restraints could be expanded where a number of conferences or a group of conference

lines joined with nonconference members to parcel out among themselves traffic or territory, as in the case of an agreement between certain continental lines. Restrictions on the number of sailings or on the volume of freight carried by each line were also common.

The *Alexander Report* described several types of devices by which the conference lines undertook jointly to combat the competition of outside lines. By virtue of the deferral feature which it embodied, the most effective of these devices was the deferred rebate system. The second device, also extremely effective, was the use of retaliatory measures against patrons of independent lines. In resorting to this weapon, the conference members usually imposed upon shippers employing nonconference lines the risk of being denied access to the regular service essential to their business, by refusing them space accommodations for future shipments at *any* price. Thus, under that system, only in the event that an independent line was able to assure the shipper of regular service on all his shipments and thus protect him against these dangers could it hope to entice business away from the conference members.

Thirdly, notwithstanding denials by liner representatives that the practice existed, the *Alexander Report* declared that "fighting ships" or similar predatory measures had been employed by the conferences or affiliated groups against independent lines. It noted the appointment by a certain conference of a committee that was empowered to select fighting ship vessels from any of the conference lines to sail on the same day and between the same ports as had been scheduled by the independent carrier, at rates reduced sufficiently to secure the traffic. The expenses of the voyage and the incidental loss would be distributed among the conference members, who collectively were far better able to bear them than the independent line. The result, therefore, was that the independent would ultimately be driven from the trade.

In formulating its recommendations for legislation, the Alexander Committee was faced initially with the question of whether or not Congress should restore free and unrestricted competition in the ocean freight industry by proscribing the system of cooperative agreements and conference affiliations which the report had described in such detail. The Committee resolved that question in favor of qualified recognition of the conference system.

Legislation implementing the recommendations of the Alexander Committee was not enacted until 1916, several years after the appearance of the Committee's report. The *Shipping Act* of that year established the basic pattern of Federal regulation of the ocean freight industry. Little has been done since to alter it.

In the *1916 Act* Congress adopted the principles upon which the Alexander Committee had based its recommendations. Limited accept-

ance of the conference system was accompanied by provision for governmental supervision. The Act immunized certain anticompetitive agreements among carriers from the impact of the anti-trust laws if, and only if, such agreements were filed with, and approved by, a government agency to be called the United States Shipping Board.

After enactment of the *Shipping Act of 1916*, little occurred of major significance in the history of the conference system until the Supreme Court decision in *Federal Maritime Board vs. Isbrandtsen*, 356 US 481, commonly referred to as the *Isbrandtsen* case. That case, the events leading up to it, and the succeeding occurrences all led directly to what I have chosen to call the current state of flux in both Government and industry. It would be best, therefore, to describe the current situation first in order better to understand its nature and causes.

CURRENT STATE OF FLUX

Today the American Merchant Marine in general and the conference system in particular find themselves utterly demoralized and confused. United States government agencies, for the first time since enactment of the *Shipping Act of 1916*, seem to be following the novel approach of enforcing the provisions of that Act. The Federal Maritime Commission, the Department of Justice, and even the Maritime Administration have taken steps within recent years to enforce various provisions of that Act which had never before been taken seriously either by the industry or by the Government. A Federal grand jury has been empaneled and is studying the possibility of indicting a number of companies for violating the *Shipping Act*.

In addition, Congress has enacted a new statute, P.L. 87-346, usually referred to as the *Bonner Act*, which places even more strictures upon the activities of conferences and requires even closer regulation.

Thirdly, as a result of these developments, foreign steamship lines and governments have considered this enforcement of American policies and interests to be hostile to their own interests. They have met together in Europe to plan countermeasures and have threatened discriminatory activities against American members of steamship conferences.

Finally, the President proposed and the Congress accepted Reorganization Plan No. 7 of 1961 which separated the regulatory and promotional functions of the old Federal Maritime Board and established two new agencies. Neither all members of the industry nor everyone in Government seems yet to have clearly in mind just where promotion ends and regulation begins under that plan.

The Reorganization Plan placed the promotional functions of the Maritime Administration completely under the Department of Commerce and, therefore, subjected them to overall administration poli-

cies. There have been some indications since that time that, rightly or wrongly, have led industry leaders to believe that the current administration is devoted to a policy of eliminating, or at least reducing, subsidies wherever possible. These indications, together with occasional remarks by various Government officials, have struck terror in the hearts of the American conference lines. The "most unkind cut of all" came with testimony by the Secretary of Defense before the House Merchant Marine and Fisheries Committee in early April 1962 in which it was made clear that U. S. national defense needs do not justify the construction of large passenger vessels and that the need for passenger sea lift has greatly diminished.

This state of affairs has resulted in a dazed, confused, offended industry and has accentuated the rifts and dissensions among management and labor groups. It has also created fear and distrust lest renewed vigor in Government regulation have the result of limiting the activities of the American Merchant Marine but making little impact upon the foreign operators. This is not conducive to either a strong American Merchant Marine or an effective conference system. I regret to report, however, that this is a situation of the maritime industry's own making.

Those of you who are familiar with Greek tragedy are familiar with the term *hubris*. It is the Greek name for that great flaw from which most heroes of Greek tragedy suffered—supreme insolent, overweening pride. It was hubris that was the downfall of Achilles, as well as of Orestes and Oedipus and so many of the rest. Believe it or not, it was hubris on the part of American shipping leaders that created much of the conference system's current difficulties with the law and Government.

The first indications of this hubris became evident in the 1930's and 1940's when the American conference system concertedly and unyieldingly attempted to drive the Isbrandtsen company out of business. Isbrandtsen was a U. S. flag steamship company owned and operated by a Danish immigrant named Hans Isbrandtsen. "Hi", as he was called, was a rugged individualist of the old school who insisted that his company would not join any cartelistic organization such as a steamship conference but would reserve the right to charge for its services whatever it chose. Not surprisingly, Isbrandtsen usually chose to charge a freight rate 10 per cent below that normally demanded by the conferences in any trade route in which he operated and thus was often invidiously referred to as a "rate cutter."

As the House Antitrust Subcommittee hearings later demonstrated, the member lines of the various conferences tried every conceivable anticompetitive device to drive Isbrandtsen from the seas: secret agreements, secret rebates, fighting committees, and others. Ultimately a so-called rate war was begun in the Pacific trade to and from

the Far East, which many lines thought was disastrous but which actually proved to be less damaging than was at first feared.

In 1952, toward the end of that rate war, the steamship conference governing trade from Japan and other Far East points to ports on the Atlantic and Gulf Coasts of the United States attempted to establish a new dual rate system. The dual rate, as you may know, is a system of conference rate-making based upon the signing of an exclusive patronage contract with each shipper, under which the conference agrees that its members will carry the goods of the shipper if they have room and will do so at a rate below that charged shippers who do not sign contracts. The shipper agrees, on the other hand, to confine all of his shipments—or a specified portion of them—to lines that are members of the conference. This device was invented in the 1920's to circumvent the outright prohibition in the *Shipping Act* against use of the deferred rebate and was widely used by many conferences operating in the foreign commerce of the United States.

Isbrandtsen contested the legality of the proposed dual rate system, and the issue ultimately came before the U. S. Supreme Court, after the Court of Appeals for the District of Columbia Circuit had found the dual rate to be unlawful under the *Shipping Act*. The Supreme Court affirmed that finding, to the shocked amazement of the shipping industry, but not, I might add, to the surprise of the antitrust bar.

After the Supreme Court decision in the Isbrandtsen case, had the conferences and their member lines been content to await further developments, as any careful lawyer who had read the Supreme Court's decision meticulously would have advised; had they been content cautiously and slowly to seek partial remedial legislation; had they not unleashed within a few short weeks their full fury upon the Congress in, not seeking, but *demanding*, legislation to "overrule" what was termed the Supreme Court's "ill-considered decision," history would doubtless have been quite different.

But this was not to be. In the weeks that followed the May 1958 decision of the Supreme Court, a lobby descended upon Washington that was stated on the floor of the House of Representatives by the then majority leader, now Speaker, to have been unprecedented in his experience. Vivid pictures of utter ruin and degradation for the U. S. flag merchant marine were painted in detail for members of Congress. Despite the opposition of Congressman Celler and a handful of others who could see that these claims were exaggerated, legislation was enacted lifting the effectiveness of the Supreme Court's *Isbrandtsen* decision for two years. That moratorium was later extended for another year and then again for a few months more until the *Bonner Act* became law.

In the interim, the Celler Committee held hearings that rocked the industry. Even those who had been closely associated with the

steamship business for years had not been aware of the extent of cheating and malpractices that existed. Virtually every steamship operator in the foreign commerce of the United States was shown to have engaged in wrongful practices that included such things as secret agreements in violation of the *Shipping Act*, discriminatory rate charges, issuance of fraudulent bills of lading, secret rebates and, in some cases, even the use of deferred rebates and fighting ships.

The impact of these revelations was so great that the House Merchant Marine and Fisheries Committee, long friendly toward the industry, was easily persuaded that greater regulation was necessary if the conference system was to be permitted to continue and the use of dual rates was to be authorized. Thus, the *Bonner Act* became law and the maritime agencies and the Department of Justice were shaken into a state of activity in this area.

This same chain of events led to *Reorganization Plan No. 7 of 1961*, for it was Congressman Celler who wrote to the President on March 16, 1961 recommending reorganization of the Federal Maritime Board because of its failure to regulate the industry adequately. Beyond doubt that plan was the catalyst that triggered the present reevaluation of subsidy policies and the resultant unrest with respect to the level of subsidies.

Whether or not my thesis is correct that the present state of flux is of the industry's own making, I do not believe it to be in the public interest that it continue. Steps should be taken, I think, to change conference policies and governmental programs to bring the industry out of its doldrums one way or another.

PROPOSALS

In the face of the apparent hopelessness of this situation, it takes a foolish head to suggest possible solutions. Being by nature a rather foolhardy person, I somewhat gingerly suggest the following courses of action concerning governmental and conference policies as a beginning toward bringing peace and order back to the American Merchant Marine.

First, certain measures ought to be taken by the Federal Government:

1. It is most important, fundamentally, that all Government agencies continue the vigorous enforcement of United States law, particularly of the *Shipping Act* and the antitrust laws. Despite arguments to the contrary, there can be no doubt that the enforcement of existing laws, if properly administered against all parties subject to them, will inure to the benefit of the United States Merchant Marine and to the public generally.

2. The Departments of Commerce and State should work actively with the governments of the major maritime nations to convince them

that enforcement of our law is not an unfriendly act and that it is to their best interest to enforce their own laws and contractual agreements against rebating and other malpractices. These steps should be taken now at the highest level to avoid the continuing misunderstanding on the part of our foreign friends. On a long-range basis, efforts should also be pressed energetically to establish international machinery for regulating water-borne commerce and particularly for stamping out generalized malpractices.

3. The Department of Commerce and the Federal Maritime Commission should cooperatively conduct extensive economic studies to determine whether or not conference freight rates all over the world place United States exporters at a disadvantage. Studies should be made to determine whether these conference rate structures, in cross-trades as well as directly in the foreign commerce of the United States, have been so established as to price American goods out of the various markets.

4. The Maritime Administration and the Department of Commerce should develop and make public a long-range subsidy plan that will remove doubts and fears from the subsidized lines and permit them to concentrate on making the best of what they have and will get. If there are to be reduced subsidies in the future, then the conference lines should know what the projected cuts will be and how long it is expected to take to bring them down to the proper level. If other segments of the industry are to be subsidized, or the general level or theory of subsidies is to be changed, that, too, should be made known to the subsidized lines.

5. The Maritime Administration should permit subsidized lines to supplement their own services by crossing over into other services and trade routes on a limited basis. This would provide greater flexibility in our fleet and would create a more competitive spirit. Moreover, if voting procedures in most conferences were only slightly modified, this would help remedy the deplorable lack of voting strength of the U. S. lines in all of the major conferences in our foreign commerce. In most important trade routes, the United States flag lines are outnumbered ten to one. If subsidized lines were permitted to serve in several trade routes and belong to other conferences, this might be remedied.

6. The Federal Maritime Commission should consider the possibility of requiring conferences to change their voting rules not only to permit the foregoing change but also to require that, at least in those cases where a country's national interests are at stake, the lines of that nation will have no more than one vote, no matter how many lines of that flag are operating in the trade. This, too, would help balance the voting power.

7. Finally, the Federal Maritime Commission should develop rules

and regulations to permit the filing with the Commission of secret agreements. One of the main reasons that gentlemen's agreements are made and not filed with the Federal Maritime Commission as required by law is the fear by parties to the agreement of giving away competitive secrets to other conference lines and particularly to foreign flag lines. So long as these agreements are filed with the Commission and the Commission is given an opportunity to approve or disapprove them in the public interest, there should be no need to make such agreements generally public except in certain limited instances. The rules permitting this should be publicly available, however.

The conference lines should, I think, take the following steps:

1. First and foremost, the merchant marine industry as a whole, or at least the conference lines, must establish greater unity and leadership for themselves. They must be able to speak with one voice when communicating with Government or the public or foreign interests. As it is, in many cases each line has a different point of view that is vociferously presented, to the confusion of all.

2. The conference lines must join forces with the Federal Maritime Commission and other U. S. Government agencies in helping to enforce United States law applicable to the carriage of ocean freight and passengers. Rather than continuing to grouse about how onerous the law is and how difficult it is to enforce against foreign lines, the American conference lines should cooperate with Government in every way possible to help stamp out these malpractices. Please note that I said *cooperate with Government*, not act independently and ineffectively as they have been doing. American conference lines often boast of their salesmanship abilities. Let them turn part of that salesmanship effort toward convincing the foreign lines and their governments that it is to their best interest to eliminate cheating and to scrupulously adhere to contractual obligations as well as applicable legal requirements.

3. The American conference lines should employ more effectively some of the weapons they now have but do not use. They can, for example, make much more effective use of the threat of resignation from the conference to accomplish what is desired in the interests of the American lines. This is particularly true now that the Maritime Administration has adopted, as of February 3, 1962, a new policy permitting subsidized lines to deviate from conference rates and policies when necessary in the exercise of good business judgment. Moreover, if the conference lines could unify to the extent of being able to employ against the foreign lines of a given conference the economic power possessed by American lines in related conferences, this, too, would be a tremendous power. Unfortunately, the conference activi-

ties of foreign flag lines which use power politics in their most ruthless form are much better developed and unified than ours.

The suggestions I have made will certainly not solve all American maritime problems, but I do think they will be a step in the right direction. We must get off dead center and move ahead or else within ten years we may find that the United States is without a merchant marine and the Soviet Union, which is making fantastic strides in this area, will have won the maritime phase of the economic cold war.

REGULATION AND EFFICIENCY

Harry X. Kelly

There was a time in our history when most cities were on the coast and "every street led down to the sea." The most natural, the most inviting, the nearest field of adventure was the ocean. Employment on shore could not offer the rewards of the sea. Both money and men turned to the sea as the field where the largest profit could be made. But agriculture, lumbering, and mining developed! There was more exploitation of our natural resources. As a result, the economic trend was against shipbuilders and shipowners. As early as 1891, a mail subsidy act was passed, although the aid was not large. Ten years later, only 8 per cent of our foreign trade was carried in our ships, and by 1913, only 9 per cent was so carried. During these years, 1891-1913, there was almost continuous discussion in Congress regarding subsidies, or bounties, as they were called. But as Congress indicated more and more interest in financial support of shipping, they also began to take increased interest in regulation. Deferred rebates, retaliation, discriminatory contracts, unreasonable preference, unjust freight rates came under surveillance—and thus came regulation.

Any discussion of regulation should begin with the *Alexander Report*. This resulted from a resolution adopted by the House of Representatives in 1912 directing the Committee on Merchant Marine and Fisheries to conduct an investigation. The Committee collected data and heard testimony for a period of two years and submitted a report in four volumes. The Committee Chairman, Joshua W. Alexander, submitted ten pages of recommendations for legislation, including the following: ". . . that rebating of freight charges to shippers be made illegal and that, with due regard to the proper loading of the vessel and the tonnage available, discrimination between shippers or ports in the matter of rates and space accommodations be prohibited. In this connection, it was the belief of the Committee that water carriers should be required to charge equal rates to all shippers irrespective of the volume of freight offered for shipment."

Extensive debate following this report resulted in the *Shipping Act of 1916*. It condemned: (a) deferred rebates; (b) inequitable treat-

ment of ports; (c) fighting ships;¹⁰ (d) retaliation against a shipper who refuses to use a particular line; (e) discrimination by means of rates or space accommodations.

The complaints of those who today clamor loudest for more regulation are based on the following:

1. Violations of Federal law and conference agreements—rebating, granting discriminatory preferences, and unlawful “gentlemen’s agreements.”

2. Anticompetitive practices—dual rate agreements that injure nonconference competitors. Those who have advocated more regulation state that use of dual rate contracts may drive all independent or nonconference competition from the particular trade. Active nonconference competition is the most practical force now operating to keep ocean freight rates at a reasonable level.

3. Discrimination against shippers and ports.

4. Deals which are detrimental to U. S. foreign commerce.

WHY DO WE REGULATE?

The purposes of the regulation of ocean shipping are:

1. To facilitate the conduct of international trade.

The exports of the entire world amount to \$100 billion annually, \$20 billion from the United States and \$80 billion from all other nations. Our share of imports is \$15 billion.

2. To provide a favorable climate for exporters and importers.

3. To protect shipping services on which trade depends.

Lines in a trade cannot prevent the development of other companies but can seek relief from unfair competitive practices.

4. To protect the national welfare and maintain national defense.

WHO ARE REGULATED BY FEDERAL MARITIME COMMISSION?

1. Common carriers by water in the domestic offshore trade.

To Alaska, Hawaii, Puerto Rico, ships are the major form of freight transportation. The Federal Maritime Commission has jurisdiction over these carriers, with one exception; the Virgin Islands are exempt from coastwise laws.

2. Common carriers by water in the foreign commerce of the United States.

There are about 400 common carriers in this trade: 35 U. S. steamship lines; 30 U. S. van lines having no ships but assuming responsibility for the transportation of freight using steamship lines; 335 foreign flag lines of many nationalities.

¹⁰ According to Section 14 of the *Shipping Act of 1916*, the term “fighting ship” refers to any vessel used to drive out a competitor from a given trade.

3. Four hundred terminal operators who can operate docks, warehouses, or other terminal facilities.
4. Ocean freight forwarders.

HOW DO WE REGULATE?

Domestic Carriers. The domestic offshore trades are subject to the sole jurisdiction of the United States. Regulation is provided in the *Intercoastal Shipping Act of 1933* and "as amended." Originally, the Act regulated carriers in the intercoastal trade, but it was amended to include common carriers by water in interstate commerce.

In 1940, the *Transportation Act of 1940* transferred regulation of intercoastal and coastwise carriers (interstate) to the Interstate Commerce Commission. However, domestic water carriers have the privilege of carrying dry commodities in bulk without Federal rate regulation. Coal, fertilizer, and agricultural products are three of the items involved. The Interstate Commerce Commission has recently made a plea for repeal of this privilege now enjoyed by the domestic carriers. The carriers are objecting because repeal would: (a) not benefit the railroads; (b) reduce competition among carriers; (c) lead to higher rates; (d) destroy or lessen the value of favorable geographic location of industrial plants along waterways where billions of dollars have been spent on plants and waterside facilities.

Problems of domestic carriers include:

Common Ownership. May a railroad be permitted to own barge lines? The most widely publicized case is the proposal of the Illinois Central and the Southern Pacific to acquire the John I. Hay Company, a water carrier operating from Milwaukee and Chicago down the Illinois and Mississippi Rivers to New Orleans and through the Gulf Intracoastal Waterway to Texas. The railroads say that fair play demands that they have the same opportunities as their waterway competitors and that the public would enjoy the benefits of joint service. The barge lines say that such acquisition is not in the public interest, that freight rates would necessarily be increased and that barge lines must remain independent in order to develop and conduct their operations.

Waterway Tolls. The Van Zandt bill, *H.R. 12395*, calls for a levy of $\frac{3}{4}$ of a mill to 2 mills per ton mile. This toll may take the form of a fuel tax. It has the support of the Association of American Railroads and seems to have the support of the Administration. As a regulatory measure it would impose a penalty on an entire industry to the apparent advantage of a hostile competitive industry. As a means for reimbursing the Federal Government for assistance to navigation, the user charge may cost more to administer than it could possibly return. The opponents of the charge say that it would not contribute to the general

welfare and that it would cause large injury and loss to considerable segments of the population.

Bridge Clearances. Here the carriers have problems with the Federal and State highway authorities and the U. S. Army Engineers. Over the Mississippi River, between St. Louis and Minneapolis, sixteen bridges are now proposed and authorized. How many feet above high water must they be? Tunnels might provide a solution to these problems.

Regarding offshore regulations, Senator Neuberger of Oregon has recently proposed that foreign flag ships be permitted to transport merchandise between the East and West Coasts of the United States. She listed the following beneficial effects of such action:

a. Restoration to American lumber interests of their rightful share of the American lumber market.

b. Preservation of thousands of lumbering jobs throughout the Pacific Northwest.

c. Creation of additional longshoreman, ship servicing, and repair jobs in West Coast ports.

d. Reduction in balance of payments deficits caused by excessive purchases of Canadian lumber.

e. Reduction in the costs to East Coast consumers of West Coast lumber and other products.

The advent of statehood for Alaska and Hawaii created new problems for the Interstate Commerce Commission and for shippers and carriers engaged in transportation to and from those states. Their statehood acts contained provisions retaining jurisdiction over water transportation to and from both of these states in the hands of the Federal Maritime Board. The Act of Statehood, however, brought Alaska motor carriers engaged in interstate commerce within the *Interstate Commerce Act*. Under existing law, common carriers subject to the jurisdiction of different regulatory agencies cannot establish through rates and joint rates with each other.

Puerto Rico also presents special problems. The *Intercoastal Act of 1933* requires carriers in the offshore domestic trades to file and post schedules showing all their rates and charges. No change shall be made in rates filed and published except by the publication and filing of new schedules which cannot become effective until 30 days after filing. With increases in wages in Puerto Rico, there is a constant tendency to increase freight rates. Here, too, confusion exists between the Federal Maritime Commission and the Interstate Commerce Commission. In addition, when a steamship line proposes an increase in freight rates, the Puerto Rico government usually objects. There is also constant rivalry between the various ports—all wanting more steamship service. Viewing the entire picture, the Maritime Commission can expect constant protests and complaints.

Common Carriers by Water in Foreign Commerce. The regulations for these carriers govern:

Admission to, withdrawal from, and expulsion of members from steamship conferences; contract rate systems; right of independent action; filing of tariffs.

In these areas the Celler Committee: (a) recommended against withdrawal of antitrust exemptions for steamship conferences, in the belief that elimination of the conference systems without substantial safeguards and authorization of much-increased subsidies might well result in severe hardship upon the American Merchant Marine and in creating rate instability; (b) approved the over-all objectives of *Public Law 87-346* as legalizing the dual rate system; (c) recognized the desirability, because of the characteristics of the shipping industry, of permitting self-protective measures by way of collective action.

The law covering conference agreements is known as *P.L. 346* or *87-346*. It provides that any common carrier by water in the trade, who furnishes evidence of ability to maintain a common carrier service and to abide by the conditions of the agreement, may become a party to the agreement. Conditions are clearly specified governing refusal of the conference to admit a member, expulsion of a member, modification of conference agreements and their availability for inspection at the Commission, allowable spread between contract and noncontract rates, nature of contracts, and tariff rates.

One of the proposed solutions to the problems of regulation is a self-policing body, sometimes known as a "neutral body." Such an agent may be the public accountant or auditor of a conference member, provided this relationship is disclosed to all conference members prior to employment and provided all conference members agree. Detailed regulations respecting books, records, and files of the self-policing agent, fines and penalties, and the authority of the Maritime Commission in these matters are a part of the proposals.

Industry Reaction. In the Bonner hearings, the number of shippers who testified in favor of contract and noncontract rates (dual rates) outnumbered the opposition about ten to one. It is interesting to note that the most vociferous of those opposing the dual rate system were more interested as carriers than as shippers. Shipper after shipper testified to approval of dual rate contracts because they stabilized rates and because these contracts enabled steamship lines to maintain regular and dependable sailings.

Nevertheless, conferences and contract rates have been under such bitter attack that the Federal Maritime Commission must do something. The first proposal is for an addition of 150 employees to the present staff of 153. The old Federal Maritime Board has been severely criticized for inactivity and negligence. Actually, they simply did not have sufficient staff to carry out their duties. The magnitude

of the immediate workload generated by the new regulations is indicated by the following figures:

a. One thousand freight forwarders exercised "grandfather rights" by applying for license within the time prescribed.

b. Sixty-one dual rate systems are now in effect, each of which must be examined for compliance with the new statute.

c. Four hundred and fifty new foreign tariffs have been filed since enactment of the dual rate legislation.

d. Substantial amendments have been filed to previously submitted tariffs (9,961 separate filings received between December 11, 1961 and January 12, 1962).

The printed record of the hearings shows that the Federal Maritime Commission has a total of 153 employees and desires to increase that number to 281, of whom 81 would be technical and 47 clerical.

When they add sufficient employees to their staff, their first big problem will be information. Can they get it? Can they obtain records in London, Rotterdam, Stockholm, Oslo? The first reaction is, no, they cannot.

Sir Donald Anderson, Chairman of the Peninsula and Oriental Steamship group operating 366 vessels, told his stockholders that retaliation as a cure was more painful for Britain than the disease but that industry and the government were discussing the whole situation and "defensive moves may involve retaliation where no other courses is open."

At a recent ten-nation meeting in London, these nations protested particularly about "handing over" their documents to the Federal Maritime Commission. However, Mr. Thomas Stakem, then Chairman of the Federal Maritime Administration, said, "We do not propose to treat U. S. flag lines any differently from the carriers of other countries. Coming to our ports, they must comply with our laws just as we must comply when we visit their ports." British Transport Minister Ernest Marples issued specific orders to a group of British steamship companies not to comply with a Federal Maritime Commission order calling on them to produce certain documents abroad.

Since the above paragraph was written, the Mitsui Line has replied that they would be violating Japanese law if they supplied the information requested.

Commercial Terminal Operators. Any person engaged in the business of furnishing wharfage, dock, or other terminal facilities in connection with common carriage by water is subject to the *Shipping Act of 1916*. Every such terminal operator must establish just and reasonable regulations and practices in connection with receiving, handling, storage, and delivery of property. There are roughly 360 terminal operators in the United States subject to these regulations.

Disputes include arguments concerning whether free time had ex-

pired or should be extended, whether demurrage charges are assessable. In November, 1960, there was an investigation of storage practices in the port of Longview, Washington. With ample space and limited business, goods remained on the docks for six months, sometimes for a year, without payment of demurrage charges. This constituted unequal treatment of shippers and preferred treatment of certain classes of cargo. The practices were judged unjust and unreasonable and a desist order was issued. Practices of the terminals in the San Francisco Bay area also were investigated.

Ocean Freight Forwarders. An independent ocean freight forwarder is a person carrying on the business of forwarding for a consideration. He is not a shipper or consignee and has no beneficial interest in the shipment for which he acts as a forwarder. Such an independent ocean freight forwarder must obtain a license from the Federal Maritime Commission before he can engage in the forwarding business. In recent years about 1,700 firms have classified themselves as freight forwarders. Under the new law, about 1,000 forwarders have been granted licenses. Under this law, strict limitations control payment for forwarding services and prohibit "brokerage" or "commission" fees and rate cutting.

CONCLUSION

I am sure that carriers, conferences, and regulatory agencies all realize what great problems we have before us and that solutions must be fair to all. It seems to me that the answers are going to depend largely on the human element.

What are the motives of those who complain and investigate, the members of the House and Senate Committees? Are they in favor of one form of transportation particularly? Do they want to continue an American Merchant Marine? Some clarifying guidance for impartial regulation is needed. Once this is obtained, regulation is vested in officials in Washington. No one has any reason to doubt their sincerity or their competence. The many agencies, the complex rulings, the uncertain programs of the policy makers, all indicate that the future course of those who conduct international trade will not be smooth. But, with understanding and cooperation, the problems should be solved eventually.

ENROLLEES PARTICIPATING IN THE SYMPOSIUM ON MERCHANT MARINE POLICY

- Duane Allison**, Massachusetts Port Authority, Boston, Mass.
- Herbert A. Asdal**, Marine Executive, Esso Tankers, Inc., New York
- Donald Banta**, Naval Architect, Bureau of Ships, Navy Department, Washington, D.C.
- William L. Brinck**, Vessel Sanitation Consultant, U.S. Public Health Service, Washington, D.C.
- R. Brandon Cratty**, Vice President-Operations Manager, Seasons Navigation Corp., New York
- Francis J. W. Cullen**, Supervisory General Transportation Officer, Mid-dletown Air Materiel Area, Olmsted Air Force Base, Pa.
- David H. Ernst**, Assistant Chief, Shipping Division, Department of State, Washington, D.C.
- Ky P. Ewing**, Attorney, Covington and Burling, Washington, D.C.
- Richard T. Fleming**, Massachusetts Port Authority, Boston, Mass.
- Thomas M. Healy**, Attorney, Gulf Oil Corporation, New York
- Clio C. Henderson**, Assistant to the Director, Directorate of Transportation, Air Force Logistic Command, Wright-Patterson Air Force Base, Ohio
- James A. Hickey**, Massachusetts Port Authority, Boston, Mass.
- Thomas M. Kelly**, Conference Representative, Moller Steamship Company, Inc., New York
- E. J. S. Lahay**, Senior Marine Radio Inspector, Ministry of Sea Communications of Indonesia, Djakarta, Indonesia
- Tiong Gie Liem**, Chief Nautical Inspection Branch, Ministry of Sea Communications, Government of Indonesia
- Lt. John J. Lyons**, USN, Assistant to Head, Household Goods Branch, Transportation Division, Bureau of Supplies and Accounts, Department of the Navy, Washington, D.C.
- Cdr. Leo J. Marshall**, USN, Surface Warfare Evaluator, Office of the Chief of Naval Operations, Navy Department, Washington, D.C.
- Wayne L. Melcher**, Supervisory Transportation Officer, Bureau of Supplies and Accounts, Department of the Navy, Washington, D.C.
- Capt. A. Stanley Miller**, USN (Ret.), Washington Representative, The American Committee for Flags of Necessity, Washington, D.C.
- Richard H. Rhoads**, Consultant, Arthur D. Little, Inc., New York
- G. M. Schuthe**, Assistant Director, Trade Services Division, Department of Trade and Commerce, Ottawa, Canada
- Paul L. Sitton**, Fiscal Analyst, Bureau of the Budget, Executive Office of the President, Washington, D.C.
- Paul C. Yu**, Vice President, United Maritime Corporation, New York

APPENDIX

SUMMARY CONCLUSIONS OF ENROLLEES PARTICIPATING IN THE SYMPOSIUM ON MERCHANT MARINE POLICY

April 23 through April 27, 1962

The Symposium on Merchant Marine Policy focused on answers to five major questions, to wit:

1. How serious is the situation of the U. S. Merchant Marine?
2. What is the military need for a U. S. Merchant Marine for the last third of 20th century?
3. What government policy and administration can and should do.
4. What labor relations can and should do.
5. What the shipping industry can and should do.

The following brief summary conclusions are based on papers presented and discussion relative to these questions.

HOW SERIOUS IS THE SITUATION OF THE U. S. MERCHANT MARINE?

The situation of the U. S. Merchant Marine is critical with respect to both ships and the proportion of cargo which U. S. flag ships carry. With 154 fewer ships, we are worse off than we were in 1939. Except for Atlantic coast tankers and colliers, intracoastal and intercoastal shipping has all but disappeared. Even the tanker fleet has declined appreciably since 1948. The U. S. liner fleet is larger than it was in 1939 but in 1961 it was carrying less than 12 per cent of U. S. trade compared to almost 50 per cent in 1951.

Technical advances in ship automation, cargo handling, new propulsion systems and vessel replacement contracts aided by the mortgage insurance law, along with stabilized labor costs offer some basis for optimism. But the overall situation, involving as it does rising cost of construction and operation under the U. S. flag and increasing competition of air and foreign flag shipping, must be considered critical.

WHAT IS THE MILITARY NEED FOR A U. S. MERCHANT MARINE IN THE LAST THIRD OF THE 20TH CENTURY?

We cannot justify American Merchant Marine on a strictly economic basis. The fundamental basis is defense needs. The present situation of the fleet to meet military requirements is good. The sub-

marine menace is greater today than in previous years. Defense requirements for passenger liners have been reduced by air lift. Block obsolescence may be detrimental to defense requirements at some time in the future based on the present shipbuilding rate of 18 ships per year.

Present defense need for naval auxiliary and cargo ships must be considered adequate until the Department of Commerce determines civilian economic needs for peace and war.

WHAT GOVERNMENT POLICY AND ADMINISTRATION CAN AND SHOULD DO

The Institute participants recognize that rational policy objectives must be determined and influenced primarily by (a) requirements of national defense, (b) economic factors of foreign trade and (c) realities of domestic politics and international affairs. The *Merchant Marine Act of 1936* contains in its declaration of policy (sec. 101) a statement of objectives which adequately considers the factors set forth above. However, interpretations of these policy objectives require reevaluation in terms of present-day considerations.

Among these considerations are: (1) *Domestic coast-wide shipping*. Deep-sea domestic coastwise shipping, because of rising costs and domestic competition of other transport modes, has all but disappeared. (2) *Flags of convenience*. Tonnage operating under flags of convenience, and their carriage of raw materials on which the nation's economy depends has grown to large proportions. The essentiality of this service, however, is not presently given recognition under the MARAD subsidy programs. (3) *Impact of air transportation*. Growth of air transportation in domestic and foreign carriage of persons has brought about a diminishing role of passenger vessels for defense purposes. (4) *The development of the NATO pool*. The pooling of ships is a factor to be considered in evaluating national defense needs. (5) *International affairs*. Growing sensitivity of foreign countries and business concerns to preferences given the U. S. Merchant Marine under current policies should be considered. (6) *Domestic political considerations*. There is developing a resistance and concern over substantial federal support required to subsidize the maritime industry.

It was the general consensus of opinion that a direct subsidy should not be extended to the tramp and domestic trades. However, others felt more study should be made in this area before concluding on a no-subsidy position.

The *Merchant Marine Act of 1936* properly declared it to be the policy of the United States to create and maintain a viable merchant marine capable of carrying a substantial portion of the ocean-borne foreign commerce of the United States. The policy declared by the Act of 1936 is equally sound today.

The basic mechanism adopted by the Act of 1936 to effectuate the policy was a combination of subsidies designed to place U. S. flag vessels on a competitive parity with vessels flying the flags of other nations. The chief subsidies by which this competitive parity was to be accomplished were the construction and operating differential subsidies. A combination of these subsidies, while expensive, has been successful in creating a viable fleet, capable of replacing itself, of vessels to which the mechanism is applied under the 1936 Act.

Under the 1936 Act the mechanism of a combination of subsidies was applied only to vessels regularly plying trade routes declared to be essential to the United States. The result has been to limit the application of these combination subsidies to liner-type vessels. The some 300 vessels in our subsidized fleet are in sound condition by virtue of the 1936 Act. They carry around $\frac{1}{3}$ of the United States ocean-borne commerce in the dry cargo-liner class, slightly more than the frequency of their sailings would appear to warrant; U. S. flag liner vessels supplied about $\frac{1}{4}$ of such sailings.

While the policy of the 1936 Act is sound, and the mechanism adopted has been successful where applied, the concept of essential trade routes now requires further study because of the shift to bulk and tanker cargoes which has occurred since 1936. Because the movement of these cargoes is not normally in vessels "regularly plying essential trade routes," the mechanism of combination subsidies has not been applied to the tramp and tanker fleets.

If the cargoes carried by vessels operating as tramps are found to be essential to the United States, then study should be made of the feasibility of removing the limitation placed on the application of the combination subsidy mechanism by the "essential trade route" concept. At the present time, the U. S. flag tramp fleet is able to continue in existence only by virtue of American cargo preference laws which are themselves contrary to the policy of competitive parity established by the *Merchant Marine Act of 1936*. Even with cargo preference aid the tramp fleet is in serious condition and has been unable to replace a single vessel with new construction.

Questions arising under the 1936 Act which need continuing study include the definition of "essential trade routes," periodic re-examination of what constitutes a "substantial portion" of our foreign water-borne commerce, the possibility of providing greater incentive for efficient management by removing the recapture provisions limiting net profits to 10 per cent of capital necessarily employed, and the problems caused by inflation to the depreciation reserve mechanism for vessel replacement.

In summary, the *Merchant Marine Act of 1936* is sound in principle and provides an effective legal basis for our merchant marine policy. Because of a shift since 1936 in the types of cargoes moving in the

foreign ocean-borne commerce of the United States, study is required to see if the limitation placed by the "essential trade route" concept on the application of the successful mechanism of combination subsidies should now be removed.

The most essential segment of this nation's shipping resources consists of private active shipping as well as the "flags of convenience" under "effective U. S. control." While from a quantitative aspect the "flag of convenience" fleet is not as large as the U. S. fleet, in qualitative terms it is far superior. The United States would not have the capability to carry out the sea transportation task in a general war without drawing heavily upon the "flag of convenience" fleet.

Under present maritime laws, "flag of convenience" shipping under "effective U. S. control" is positively essential to meet national security requirements. This dependence on "flag of convenience" shipping, Admiral Wilson pointed out, must be considered as an expedient in lieu of any other suitable or presently known alternative. The ideal situation does not exist.

The Committee expressed some moderate concern relative to the effectiveness of control over the "flags of convenience" ships. It was counter-argued that the provision of war risk insurance and an extremely thorough personnel screening process rendered the control at least adequate.

The *Merchant Marine Act of 1936* sought to put American ships on a parity with their foreign competition. Through its mechanisms of construction and operation subsidies, the Act places American liners in a position of competitive parity. *Public Law 664*, however, contradicts the objective of the 1936 Act by reserving at least 50 per cent of certain cargo markets exclusively for United States flag vessels. Among such markets are the agricultural commodities shipped under *Public Law 480*.

Insofar as *Public Law 664* has given to the liner segment of the American Merchant Marine cargoes which it would otherwise not have obtained, the law has granted a distinct favor to one already put on a competitive parity with foreign vessels. The existence of *Public Law 664* has permitted the existence of an American flag tramp fleet which is denied an operating subsidy but for which a construction mortgage insurance is available. The existence of *Public Law 664* and the cargoes gained by it for the American tramp fleet have not, however, produced earnings sufficient to provide money for a replacement program. It is significant that one of the spokesmen for the American Tramp Steamers' Association pointed out that cargo preference has been a failure as a mechanism for developing a viable American tramp fleet capable of periodic replacement of its vessels.

Cargo preference, as a method of aiding the United States Merchant Marine, is one that particularly invites the placing of similar restric-

tions by other countries on their foreign trade. If all nations adopted the principle of 50/50, it would mean that ships would travel empty half the time; the size of the world's fleets would be double that required and the resources allocated to shipping would be twice what is economically justified.

The argument that the preference created by *Public Law 664* aids the United States balance of payments position is basically fallacious. First, the ocean freight earned because of *Public Law 664* is an almost insignificant factor in the American balance of payments position. Second, a large portion of the ocean freight paid to foreign flag vessels is immediately re-spent in the United States for disbursements of port expenses, stevedoring, fuel, supplies, commissions, etc. Finally, the denial of ocean freight receipts to countries dependent for their own balance of payments position on their sale of ocean shipping services simply means that these countries are able to purchase less American manufactured goods; a reduction in foreign purchases of American goods is a distinctly unfavorable influence on the United States balance of payments position.

It is particularly important to view the effect of the cargo preference laws in terms of their overall effect on world trade. In this light, the cargo preference provisions are seen as a poor mechanism for aiding the United States flag vessels, as a strong irritant to foreign nations particularly susceptible of evoking retaliatory measures, and as a contradiction to the objective of parity enunciated in the *Merchant Marine Act of 1936*. At a time when the United States is attempting to better its balance of payments position by expanding trade and lowering its protective tariffs, the existence of protective walls of cargo preference is particularly troublesome.

It was agreed that in the short run, cargo preference had been of substantial benefit but the enrollees were divided in justifying it as a long-run policy.

WHAT LABOR RELATIONS CAN AND SHOULD DO

Labor relations should provide a situation in which both labor and management can examine common problems in an atmosphere of mutual confidence and understanding. One of the principal difficulties with U. S. Merchant Marine policy today is that such a situation does not exist. This has, in part, created four problem areas which exist today in this facet of the U. S. Merchant Marine operations.

1. High wages which are non-competitive internationally.
2. Instability of U. S. Flag Service due to frequent strikes or other forms of harassment.
3. Apparent lack of understanding in U. S. Merchant Marine labor officials concerning international law, the need for the largest possible effective merchant marine fleet available to United States control and

adequate concept of the public interest.

4. These matters have contributed substantially to the rapidly deteriorating "image" of our U. S. Merchant Marine and to the continuing losses in the area of Congressional support of the merchant marine.

Maritime labor, through effective labor relations with ship operators, should develop opportunities and conclude realistic settlements and solutions of common problems, to avoid future losses. The Federal Government should sponsor programs of research and development to implement technological advances and automation in the shipping industry. There should be a major effort on the part of all interested parties (labor, management and Government) to establish an environment of acceptance of advanced technology in order to foster the development of an efficient and dynamic transportation system to serve the national interest. If this is not forthcoming, we can only conclude that the United States Merchant Marine will continue to deteriorate.

WHAT THE SHIPPING INDUSTRY CAN AND SHOULD DO

Government construction subsidy, providing for capital reserves, credit for obsolete vessels and Government (Title XI) insurance of commercial mortgages based on determination of economic feasibility, indicate that there is little difficulty in financing replacement of the fleet. Redetermination of vessel life at 25 years and provision for deferred construction to allow multiple-vessel construction contracts may affect funding problems, especially when current capital reserves, based on low acquisition cost of current fleet, are depleted.

There seems to be no probability of financing vessel replacement for nonsubsidized carriers. Exceptions are industrial carriers who may finance on the general credit of the corporation and/or security of existing assets and, in case of an improved tanker market, carriers holding operating commitments with Military Sea Transportation Service or other long term charterers which would support the economic feasibility of construction.

Mr. Fixman's presentation dealt with a new technological development which will assist the shipping company in a variety of management and operating problems. This is the use of high-speed computers in problem solving in the areas of operations and design.

Through electronic computers capable of manipulating numbers in microseconds, large numbers of alternative choices can be explored quickly and accurately. Variables, such as number of ships, cargo loadings, wage rates, fuel costs, freight charges, etc., can be examined in various combinations in order to determine the most efficient arrangement of factors.

The pioneering work in this technique was done by Matson Navi-

gation Company. Since 1958 they have used mathematical simulation by computers to explore their particular operating problems. Maritime Administration activity in this field dates from 1960 when a contract was placed with Arthur D. Little and George G. Sharp Companies to use this technique in studying various aspects of ship design and operations. It is anticipated that this facility will be made available to the shipping companies for their assistance in improving overall efficiency.

The group was of the opinion that this technique offers great promise in investigating typical problem areas such as subsidy determinations, vessel replacements, trade route studies, evaluation of competition, trade forecasting, and mobilization planning. In addition, this technique can be applied to ship design processes wherein optimum combinations of design coefficients, dimensions, deadweights, displacements, speed and power, etc., can be investigated rapidly.

In discussion, it was agreed that the use of electronic computers in operations research and ship design provides an extremely useful tool to the shipping industry. Decision-making in areas involving large numbers of variables can be greatly facilitated. The group expressed particular hope that joint Government-industry efforts can be initiated in this new and promising field.

We recognize that the studies conducted by the National Academy of Sciences, the Maritime Administration, and other organizations, on the economics of unit load systems are pertinent studies. Various aspects of containerization and the unit load principle should be carried forward. These studies should include not only the technical and operating aspects but also the related labor and customs problems.

Containerization offers one of the most encouraging prospects of reduced cargo costs, but there remain many problems to solve, particularly in the area of foreign trade operations. There is a need for international agreement on standards before large capital investments are made to provide containers, specialized ships, and special port facilities for a unit load system in foreign trade operations. The freight forwarder can play a key role in unit cargo operations.

One of the more significant ways U. S. transporters can improve the efficiency of their operations is through the establishment of trade development structures within their organizations and all lines, U. S. or foreign flag, have the same opportunity to take advantage of U. S. Department of Commerce data relative to foreign trade for the purpose of developing trade for their line. By actively and aggressively operating a trade development department within their organizations, U. S. lines engaged in the foreign commerce of the United States will materially aid the commerce of the United States and contribute to the economic welfare of the United States Merchant Marine.

It was generally agreed that regulation of certain segments of the

maritime industry, such as ocean freight conferences, ocean freight forwarders and marine terminal operators should be maintained. Such regulation, however, should not hamper the industry with unworkable rules. This requires that these regulations be subject to frequent review and that remedial action be taken promptly as required to keep such legislation current and to serve the best interests of all.

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